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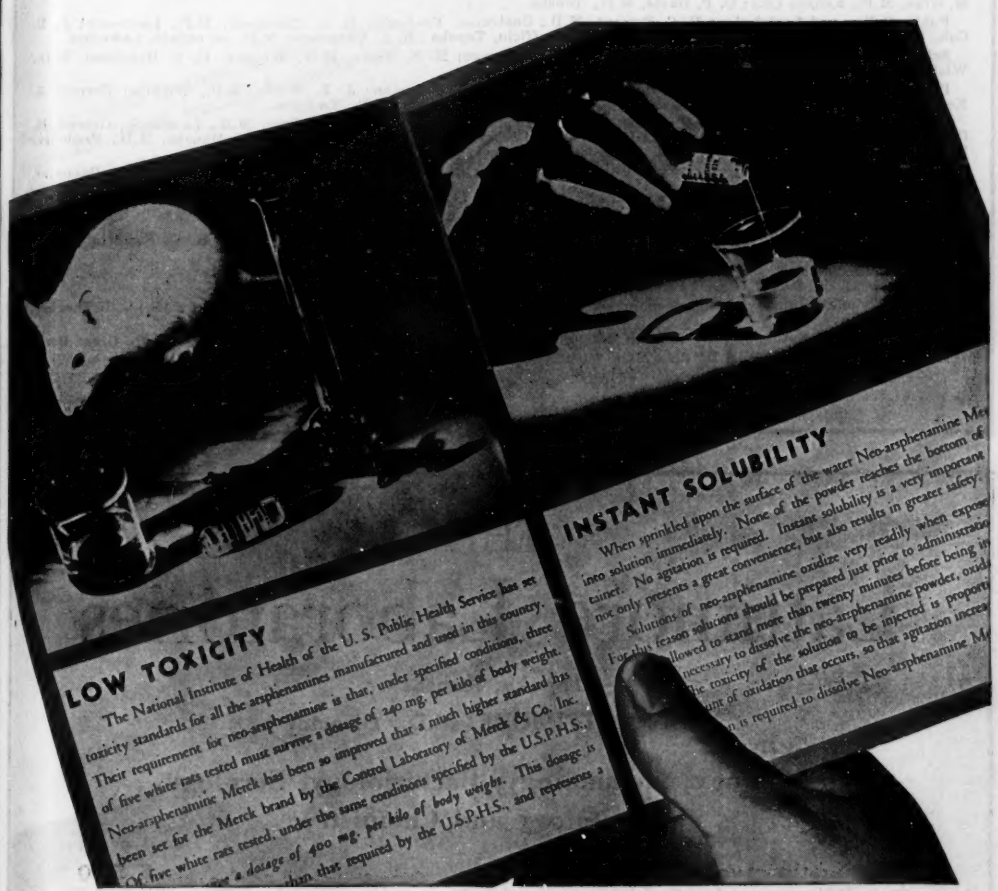
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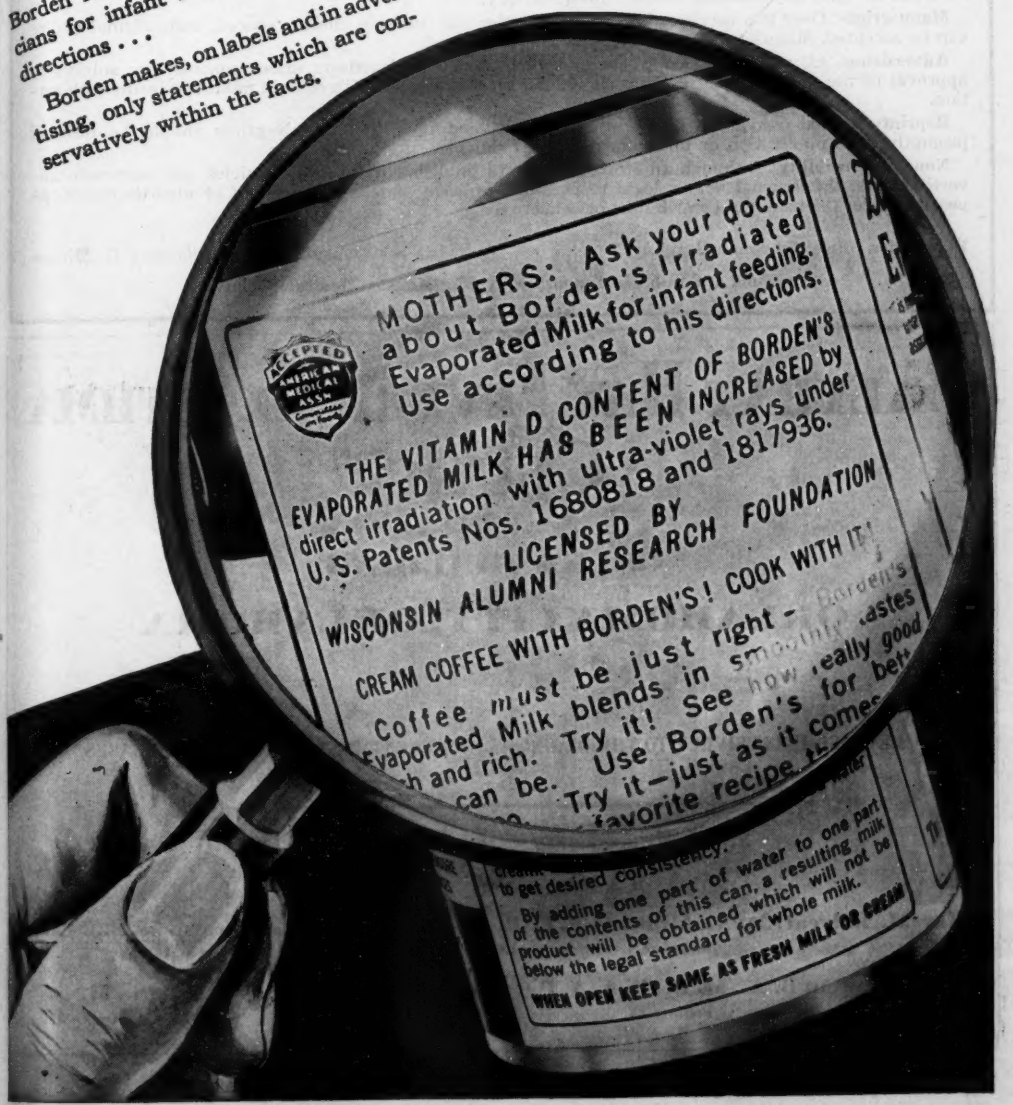
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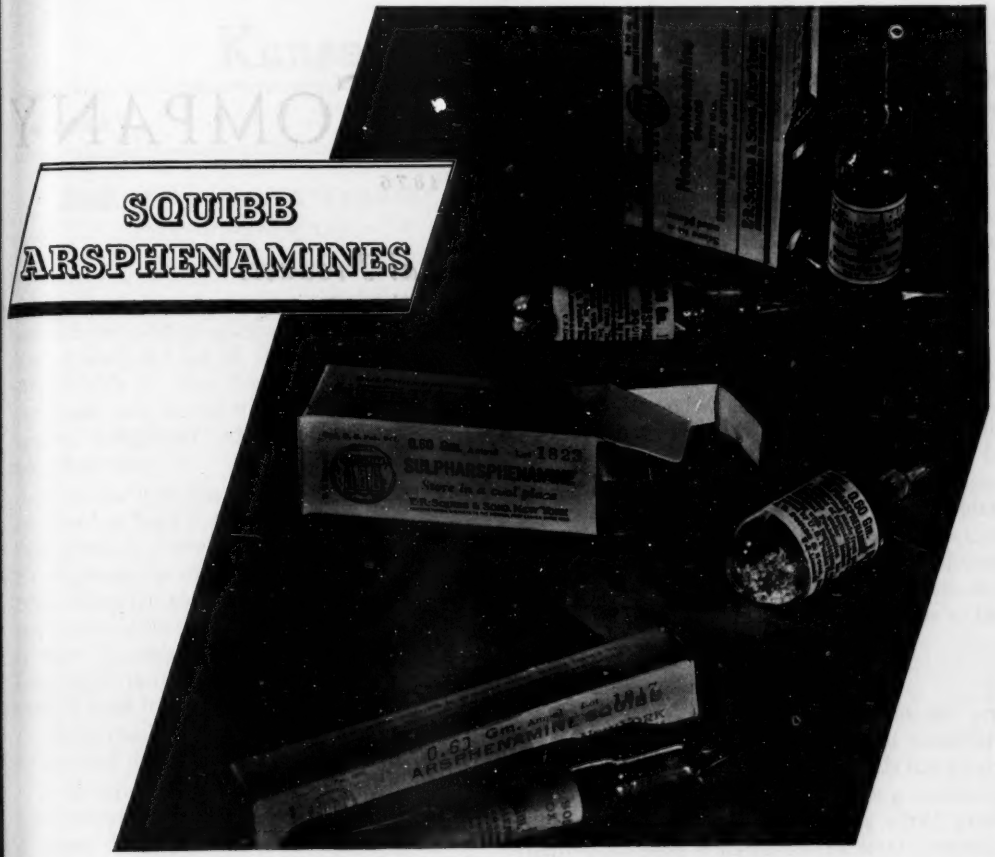

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ESSENTIAL HYPERTENSION*

EDGAR V. ALLEN, M.D.†

Rochester, Minnesota

Of all adults, 15 per cent have hypertension and 23 per cent of all deaths of patients who have passed the age of fifty years are directly attributable to this disease. Hypertension is, therefore, one of the most common and most serious conditions which physicians are required to treat.

Since the very first recognition of it, hypertension has been characterized by its resistance to treatment. Failure of attempts to lower the blood pressures of patients who have hypertension has led to shabby reasoning and to excuses why the blood pressure should not be lowered in cases of hypertension. Thus, it has been said that hypertension should not be treated since it is a symptom and not a disease, and that the heightened blood pressure is protective and danger attends lowering of it.

It is valueless to argue whether abnormally high blood pressure is a symptom or a disease; it causes death directly. There is adequate evidence, some of which I shall present later, that it is not harmful to lower blood pressure in cases of hypertension; in fact, such an accomplishment is highly desirable.

At The Mayo Clinic, we are daily impressed with the fact that hypertension, in many instances, is a malignant disease as far as seriousness is concerned, and that treatment should be based on this conception. Surgeon and patient are willing to accept a high mortality and repeated operations in an attempt to eradicate carcinoma, and this same attitude is justified in the treatment of certain patients afflicted with hypertension.

NORMAL BLOOD PRESSURE

The systolic pressure of the newly born, which is about 50 mm. of mercury, increases rapidly, so that at the end of the first week of life it is about 60 mm., and by the end of the first month, 82 mm. From the ages of four to sixteen years, the systolic blood pressure increases from 90 mm. to 115 mm., and the diastolic pressure from 60 to 75 mm. After this there is no significant change until the age of fifty years for men and until after the menopause for women, at which periods there is further slight increase. The normal systolic blood pressure of adults ranges from 90 to 140 mm. of mercury, whereas the normal diastolic pressure ranges from about 70 to 90 mm. of mercury. The systolic blood pressure is that in the arteries immediately following closure of the aortic valve. The diastolic pressure is a measure of the resistance of the arterioles to the passage of blood through them.

TYPES OF HYPERTENSION

There are two types of hypertension: primary or essential hypertension, and secondary hypertension. The first term, which has served as a mask for ignorance, indicates a condition of unknown etiology. Synonyms which gradually have been replaced by the term "essential hypertension" are "the pre-albuminuric stage of chronic Bright's disease," "latent arteriosclerosis," "presclerosis," "hypertensive cardiovascular disease," "malignant sclerosis" and "benign sclerosis."

Secondary hypertension consists of those elevations of blood pressure which follow known causes, such as coarctation of the aorta, glomerulonephritis, aortic heart disease, exophthalmic goiter, tumors of the suprarenal glands, toxemia of pregnancy, and so forth.

HISTORICAL

For many years hypertension was all but universally regarded as a consequence of preexisting renal disease or arteriosclerosis. As early as 1874, Mahomed surmised that hypertension could occur independent of renal disease or acteriosclerosis, but he believed that disease of the kidneys was an inevitable consequence of hypertension. In 1893 von Basch introduced the sphygmomanometer into clinical medicine.

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*Address before the 76th Annual Meeting of The Kansas Medical Society at Wichita, Kansas, May 9, 10 and 11, 1934.

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He made more than 100,000 determinations of blood pressure and was well acquainted with essential hypertension, as it is known today. It remained, however, for Allbutt in England and Huchard in France, in the last decade of the nineteenth century, to impress on members of the medical profession the great frequency of hypertension unassociated with clinical evidence of renal disease. Allbutt described the case of a woman who had high blood pressure, and whom he observed for a period of years, but "years passed on and the dreaded Bright's disease never appeared" until finally she died of cerebral hemorrhage. Janeway, in 1912, formulated the causes of death in cases of hypertension, and laid down the facts on prognosis.[11, 12]

THE DIAGNOSIS OF ESSENTIAL HYPERTENSION

The diagnosis of essential hypertension usually is easy. The important thing to remember is that high blood pressure may be a manifestation of diseases such as hyperthyroidism, coarctation of the aorta, and so forth. In the early stages it is easy to separate essential hypertension from hypertension that is secondary to glomerulonephritis, because of the absence of an unusual amount of albumin, blood, and casts from the urine in the former condition. In the later stages of the two diseases, distinction may be difficult, although examination of the retinae by an experienced ophthalmologist is of great value. In essential hypertension the blood pressure is more, the myocardium is injured more, and the peripheral arteries on palpation and the arterioles seen under the microscope following biopsy of muscle, are more hypertrophied. When reliable histories are available, the hypertension is found to be of greater duration in essential hypertension; in glomerulonephritis there is almost always a history of edema. But even when the pathologist has the kidneys in his hands or examines sections of them under the microscope, he is frequently puzzled as to whether the renal lesion was primary or secondary. Fortunately, in only about 10 per cent of cases of essential hypertension does any significant renal insufficiency develop, a fact that is of aid as a general observation, but that is of little value in any specific case. From a practical standpoint there is little to be gained from distinguishing between the two conditions when evidence of renal disease is advanced. The prognosis in each instance is equally grave.

Another thing to be remembered is that the original reading of blood pressure is not reliable. Patients consult physicians because of fear, and fear increases the blood pressure. Thus, a physiologic increase in blood pressure may be mistaken for true essential hypertension. We make it a practice in the clinic, in instances in which the blood pressure is elevated, to determine it at a second visit when the surroundings of the examining room, and the physician, are more familiar to the patient, and after he has rested for fifteen or twenty minutes. If a physician follows this simple precaution he will be spared the error of giving an unduly grave prognosis because of the temporary unusually high blood pressure.

CLASSIFICATION

Various classifications of essential hypertension are not very impressive. They have their greatest importance in prognosis; yet this cannot be determined with any accuracy, ordinarily because the hypertension may progress from one group into another, and the prognosis becomes much graver. The best example of the value of classification as regards prognosis is well illustrated by the malignant hypertension described by Keith; 90 per cent of the patients are dead within eighteen months after examination at the clinic.

It is probable that classification of essential hypertension will remain of little practical value except in a prophetic way. Not many years ago, dysentery, or flux, was considered a single disease. When it was classified on the basis of etiology, real strides were made in the treatment and in other management. The same situation would doubtless be true for hypertension if the etiologic factors were multiple instead of single as they appear to be. It is almost certain that essential hypertension is an expression of heightened irritability of the sympathetic nervous system, and that this is almost uniformly inherited.

PATHOGENESIS

The evidence is clear that widespread vasoconstriction increases the general intra-arterial blood pressure. C. H. Mayo has shown, in a case of paroxysmal hypertension, that capillaries of the nail fold become entirely obliterated as a result of constriction of the arterioles when the blood pressure was elevated. Injections of epinephrine and ephedrine, fear, and anger increase the blood pressure by inducing vasoconstriction. The variations in blood pressure observed among hypertensive and among nor-

mal subjects appear conclusively to be results of varying degrees of vasoconstriction.

Numerous observations have indicated that essential hypertension in its early phases is the result solely of widespread vasoconstriction, a central abnormality. In such instances the blood pressure may return to normal temporarily, with application of such simple measures as rest and sedatives. In advanced stages of the disease there appears to be another factor working, with vasoconstriction, to increase the peripheral resistance and thus the blood pressure; namely, organic narrowing of the arterial lumens.

The exact situation of the preponderant vasoconstriction now can be stated definitely to be in the splanchnic vessels. The evidence may be summarized as follows: When cuffs of blood pressure apparatus are placed around three extremities and inflated above the systolic blood pressure, the rise in intra-arterial pressure of the free extremity is only slightly and transitorily increased. Individuals, three of whose extremities have been amputated, and the arteries of whose remaining extremity have undergone marked occlusion, do not ordinarily have hypertension. When spinal anesthesia is given to a patient with hypertension, the maximal fall in blood pressure is not obtained until the anesthetic has affected the splanchnic nerves. Removal of central control of the vasoconstrictor fibers to blood vessels, and thus maximal vasodilation in the extremities, is accomplished by lumbar and cervicothoracic sympathectomy, but the blood pressure is not significantly influenced. However, removal of sympathetic control of the splanchnic vessels in many instances reduces the blood pressure to normal or to nearly normal limits. These observations and others summarized by Fishberg, offer excellent evidence that the splanchnic region is the site of the vasoconstriction which causes the peripheral rise in blood pressure by which essential hypertension is recognized. These few facts about the pathogenesis of hypertension can be summarized as follows: essential hypertension, in its early stages, is the result of vasoconstriction, chiefly in the splanchnic regions; in the later stages of hypertension, organic arterial changes which occur as direct results of the hypertension produced by vasoconstriction contribute to maintenance of the blood pressure at a hypertensive level. Interest in hypertension is almost solely with that of the vasoconstrictive element, for it is during this phase of the disease that something may be accomplished from the standpoint of treatment. Having assumed that hypertension is due to vasoconstriction, the cause of vasoconstriction remains to be stated.

ETIOLOGY

Sex, race, the endocrine glands, exclusive of the suprarenal glands, excess of protein in the diet, obesity, gluttony, abnormality of hepatic function, lead poisoning, tobacco, alcohol, so-called intestinal auto-intoxication, syphilis and infections do not explain the majority of cases of essential hypertension. The two structures which I wish to discuss somewhat in detail from the standpoint of etiology of essential hypertension are the suprarenal glands and the sympathetic nervous system.

The suprarenal glands and hypertension: The possibility that essential hypertension results from an increase of epinephrine in the blood has been considered ever since epinephrine was isolated from the suprarenal gland and was proved to have vasoconstricting properties. The theory which has been more or less periodically in and out of vogue has been revived recently by a report in which the terms "hypersuprarenalism" and "essential hypertension" were used synonymously, and in which the procedure of partial suprarenalectomy was considered to be as specific as is partial thyroidectomy for exophthalmic goiter.[7] Unfortunately, the reported results did not support the contention that a relationship of cause and effect exists between hyperepinephrinemia and essential hypertension. However, it seems pertinent here to review some of the known facts about this possible relationship. Excretion of epinephrine is entirely under control of the abdominal sympathetic nerves, and apparently the suprarenal glands no longer liberate epinephrine into the blood stream when control by the sympathetic nerves is removed. The theory that production of essential hypertension is increased by liberation of epinephrine is based on either (1) increased local activity of the sympathetic nerves which control the suprarenal glands, hence, liberation of increased amounts of epinephrine, or (2) on some inherent condition of the suprarenal glands which causes production of an increased amount of epinephrine. Tumors of the suprarenal gland cause paroxysmal hypertension, but in essential hypertension increases in blood pressure are not paroxysmal. In a case of non-paroxysmal hy-

pertension, in which the patient recently came to necropsy, a tumor of the suprarenal gland was found, but pathologists state that this is an extremely rare condition, and could not conceivably account for the vast majority of cases of essential hypertension. Hypertrophy of the medulla and cortical adenomas frequently are found in hypertension, but the significance of the findings is debatable. Hypertrophy of the musculature of the suprarenal veins, and increased vascularity are fairly constant findings, but they may represent evidence of increased activity of the sympathetic nervous system and do not directly indicate hypersecretion of epinephrine.[3] Even increased amounts of epinephrine in the blood of patients with essential hypertension, which have been reported recently,[14] do not indicate cause and effect, because it is not indicated that epinephrine is present in the blood in sufficient amounts to cause marked hypertension. Rebuttal to the arguments advanced for a causal relationship between increased liberation of epinephrine from the suprarenal glands and hypertension is furnished by work on experimental animals which indicates that sufficient epinephrine to cause hypertension is enough to "raise the blood sugar to an extreme diabetic level, dilate the pupils, paralyze intestinal and gastric movement and cause erection of hair along the neck and tail.[3]" Obviously, these conditions do not exist in the human being who has hypertension. The review just given is brief and does not warrant definite conclusions. Further investigations are being carried out at present. My own feeling in the matter is that increased suprarenal activity, if present in hypertension, is only an expression of heightened irritability of the entire sympathetic nervous system.

The sympathetic nervous system: More and more attention is being directed toward the part played by the sympathetic nervous system in hypertension. It is a fact that stimulation of the sympathetic nervous system causes temporary hypertension by provoking vasoconstriction. Individuals appear to differ in degree of response of their sympathetic nervous systems to external stimuli. If a shot were unexpectedly fired in a room, the surprise would provoke temporary elevation of blood pressure of every individual there. The degree of response of blood pressure, and the speed of its return to normal would vary in different individuals. Those cases in which the increase in the height of blood pressure and the period before it returned to normal were maximal would be those cases in which the sympathetic vasomotor nervous systems were hyperirritable. Variations in blood pressure have been shown to be greater among individuals who have hypertension than among normal persons, as can be observed by twenty-four-hour studies of blood pressure.[17] Recently Hines and Brown developed a standard test or stimulus to vasoconstriction. They have shown that immersion of the hand in ice water for one minute produces a sharp increase in the blood pressure. This increase is much more marked if individuals have hypertension than if they have normal blood pressure. The studies of Hines and Brown indicate, therefore, an increased sensitivity of the vasomotor nervous mechanism in cases of hypertension. This heightened reactability appears definitely to be central in cause, for studies have shown that the inhalation of carbon dioxide caused greater increases in the blood pressures of hypertensive subjects than of normal subjects.[18] This indicates heightened irritability of the intracranial vasomotor center, for carbon dioxide has no pressor effect on peripheral structures. Further evidence has been reviewed by Fishberg.

Doubtless heredity plays a major part in the endowment of certain individuals with hypersensitive vasomotor mechanism. Sibs of patients with hypertension are much more likely to have hypertension than are those of patients whose blood pressure is normal. Even when sibs of individuals who have hypertension, are not, themselves, afflicted, the pattern of reaction of their blood pressures to a standard stimulus is that of individuals with hypertension.[9] A second factor is the acquisition of abnormally sensitive vasomotor mechanisms as a result of environment. African negroes, and Chinese living in a native state, practically never have hypertension, but American negroes and Chinese in large cities have hypertension in as high a proportion of the entire population as do white men. It is probable, then, that environment may retard or suppress an inherited tendency to hypertension, or may provoke earlier or more intense hypertension among individuals who carry the constitutional central abnormality of hypertension. The hyperirritability of the sympathetic vasomotor nervous system is expressed by over-reactions to standard stimuli. In this modern age, with its greatly multiplied difficulties of living and adaptation to environment, there are probably

thousands of episodes of sympathetic stimulation each day, each one followed by temporary hypertension; over a period of years the arterial musculature responds, by hypertrophy, to these innumerable episodes of vasoconstriction, and the hypertension progresses to the organic stage. Hypertension is viewed, then, not as a disease of sex, race, diet, climate or occupation, but in its true light, a disease of heredity and competitive life.

PROGNOSIS

Prognosis in hypertension is, at best, uncertain. Too much stress has been laid on a single factor, the height of the blood pressure. The sphygmomanometer reading exaggerates the true status of the hypertension when single readings are made in the office. The information desired is concerning the level of the blood pressure throughout the entire day. This is best acquired by hourly determinations of the blood pressure during activity, rest, and sleep. The mean of these determinations reflects fairly accurately the seriousness of the hypertension from the standpoint of its height only. Even when this information is gained it is likely to be misleading in prognosis because other important factors are at play. Almost every physician who has observed patients with hypertension over a period of years can recall some who have had severe hypertension from which they have not suffered, apparently. Other individuals, whose hypertension is of minor or moderate degree, may acquire serious complications of hypertension. The diastolic blood pressure is of greater importance than the systolic in determining the outlook for patients with hypertension. Variations in the height of the blood pressure, as shown by hourly determinations, influence prognosis. Hypertension fixed at a high level is more serious than that which fluctuates from high to nearly normal, because the total vascular strain is much greater in the former instance, and organic arterial disease is in an advanced stage.

The history of death of parents, brothers and sisters at an early age, from cardiovascular renal disease, seems to indicate an unfavorable prognosis for individuals with hypertension; conversely, longevity of these relatives is an encouraging sign.

Evidence of impaired cardiac or renal function is of very serious import, but individuals may recover from the effects of a cerebral hemorrhage, to live many years in comparatively good health. Advanced changes in the retinal arteries, viewed with an ophthalmoscope, and in the arteries of skeletal muscle removed for biopsy and studied microscopically ordinarily are indicative of a grave prognosis.

Age and sex are important factors; older persons are most likely to die from diseases other than hypertension, and women tolerate increased blood pressure much beter than men.

The most important of all factors in prognosis of hypertension is rapidity of progress of the condition. A short span of life can be predicted for individuals with hypertension characterized by moderate changes in heart, blood vessels, or kidneys, if their blood pressure has been known to have been normal one, two, or three years previously. The same prediction holds for individuals whose blood pressure gradually has ascended over a short period, even when organic arterial disease is of a minor nature.

The second most important factor influencing the future of patients who have hypertension is the inherent resistance of the arteries and myocardium to serious organic or functional change. This is a truly imponderable factor, and appears to account for the wide spread in the degree of structural change in arteries, and of functional change in the myocardium in groups of patients in which other factors seem comparable.

All signs may fail in prediction of the course of hypertension. Prognosis should always be made cautiously and expressed with wide latitude. Practically, it need never be attempted unless requested; then a favorable prognosis given to the patient, even if eventually wrong, is better than a grave one, right or wrong.

TREATMENT

If what has been stated regarding the pathogenesis and etiology of hypertension is true, the problem of treatment is that of alleviating the abnormal sensitivity of the sympathetic vasomotor nervous system, or of severing the connection of the vasomotor center with the place where the hypertension is effected, namely, the splanchnic blood vessels. Consideration of the former falls under the heading of medical treatment, and consideration of the latter, under the heading of surgical treatment.

Medical treatment: Avoidance of stating an unfavorable prognosis directly to the patient is important in the treatment of hypertension. When careful evaluation of all factors influencing prognosis indicates an unfavorable outlook, the information should be communicated to

relatives of the patient, but the patient himself should be reassured. There can be no condoning, by thoughtful physicians, of the too often expressed opinions to hypertensive patients that "you may have a stroke some day," or "your heart will blow out some day," or, "you will fall dead sometime." These actual statements, made by physicians to patients whom I have treated, represent the most grisly examples of perverted service to the sick. They engender fear which makes the patient unhappy, and contribute to maintenance of his blood pressure at a higher level than it would assume as a result of better advice. Assurance of the benignancy of hypertension in specific cases may constitute an untruth, but it is a worthy one and can do no harm. This statement does not imply lack of necessity for supervision of patients with hypertension; such supervision is better carried out, with the statement that the procedures outlined serve to hold the hypertension in check. Most patients fear a "stroke," a feeling best allayed by the frank statement that it will not occur. This statement usually will be correct, for cerebral hemorrhage constitutes only about 15 per cent of the serious complications in cases of hypertension.

A rational program of treatment, when hypertension is first discovered, begins with a period of rest in bed for the patient. During this time the blood pressure should be read frequently; if hospital facilities are available, readings should be made every hour or so. The results, charted on a sheet of paper, almost invariably show lowering of the blood pressure, which encourages the patient and convinces him of the value of rest. The action of drugs can be determined during this time. Intimation of, or statement of, the probabilities or possibilities of cure of the hypertension are to be avoided. Once the patient feels his blood pressure can be made to return to normal he is rarely satisfied with less. One can speak of holding it in check to much better purpose.

Almost all the drugs and preparations recommended for treatment of hypertension are of little or no value. By far the most valuable are the sedatives; of these the barbiturates are of preeminent benefit. Under controlled conditions, it can be demonstrated that administration of large amounts of sedatives will cause the blood pressure to return almost to normal, and will abolish increases in blood pressure following stimuli such as immersion of the hand in ice water.

Unfortunately, the sedative effects of large amounts of the drugs prevent the routine use of them, for the patient would be unable to carry on a normal existence. The amount to be given three or four times a day should be great enough to abolish nervousness and restlessness, and small enough to avoid drowsiness and excessively slowed mental reactions. Larger amounts are advisable during the week-end when it is unnecessary to carry on normal activity. Various other drugs reduce the blood pressure temporarily by causing vasodilation. In my experience, this effect is of too short duration to be of any great benefit. There is, however, no harm, and perhaps some benefit, in the use of nitrites.

Diet is of little or no benefit. Physicians have used dietary management largely because there appears to be nothing else to do; it is tangible evidence of medical care. I feel that dietary management may even be harmful. Patients who are advised to avoid certain foods are reminded at every meal time that they are unwell. This reminder serves to keep alive their anxieties and fears regarding the hypertension. I see no reason why patients who have hypertension should not eat the usual foods. Obesity should be avoided because it increases the work of the myocardium and embarrasses cardiac action by depositions of fat around the heart and in the heart muscle.

I believe that repeated determinations of blood pressure, at short intervals, are distinctly harmful. After the first period of study of the patient's blood pressure, it is better to determine its degree not oftener than every three or four months. By this procedure, heightened concern on the part of the patient is obviated, while daily or weekly readings induce a state of continuous anxiety and worry. One need only observe the anxious and distraught features of patients who have hypertension, while the blood pressure is being determined, to recognize the fears this procedure awakens. Physicians see no need for daily or weekly roentgenologic examinations for pulmonary tuberculosis or for carcinoma of the stomach, and none exists for sphygmomanometric readings of blood pressure.

Rest is important in the treatment of hypertension, and prescription of rest requires fine judgment. Apprehension and semi-invalidism can be brought on by a regimen which is too strict. Ordinarily patients should rest or sleep in bed nine to ten hours each night, lie down in

a quiet, darkened room for an hour at midday, and when possible, rest in a quiet, peaceful environment during the week-end. Regular vacations are important. The lives of all individuals are occupied with non-essentials. The physician should weigh the pleasures these activities give, against the benefit to be derived from elimination of them. Civic and club activities may be strenuous enough to make cessation of them desirable.

In two circumstances restriction of activity is of debatable advisability. The patient who has evidence of advanced disease but who still can carry on may be allowed to do so until he "drops in the harness." He is frequently much happier living in this manner. Another type of patient is the dynamic individual whose entire life centers around activity. He may voluntarily choose the road of unrestricted living. No great attempt should be made to dissuade him; his accomplishments and not his life-span are the important factors in his life. It is too seldom remembered that life has breadth as well as length.

Rest and reassurance constitute the foundations of medical treatment. Some physicians argue that the best of medical measures are of no avail in hypertension. This may be true in large degree. The necessity for medical supervision is, however, no less acute for the comfort it gives to patients and relatives. Not infrequently the physician observes that the measures that have been outlined appear to influence the course of the hypertension beneficially. They are, therefore, fully justified.

Surgical treatment: Removal of the cervicothoracic and lumbar sympathetic nerves, as carried out for Raynaud's disease, has no significant influence on blood pressure. Bilateral partial suprarenalectomy has been reported by DeCourcy[6] to have beneficial effect; the average fall in systolic blood pressure of eight patients was 70 to 90 mm. of mercury, and in diastolic blood pressure, 40 to 50 mm. of mercury. Partial suprarenalectomy is certainly entitled to further trial in treatment of hypertension.

Resection of the splanchnic nerves, following the technic described by Craig and Brown, has been carried out at The Mayo Clinic in eight instances. The results have not been striking. The condition of individuals with far advanced arterial disease resulting from hypertension invariably has progressed to death. Other patients, who have less advanced stages of the disease, have received a maximum of about 25 per cent reduction in systolic and diastolic blood pressures. It appears that resection of the splanchnic nerves is far from the most desirable procedure in hypertension. It cannot be said, however, that it has had an entirely fair trial until the effects of it on blood pressure of patients with early phases of hypertension have been observed.

Resection of anterior spinal roots for hypertension has been reported by Adson and Brown. Twelve patients have been operated on at The Mayo Clinic. In all instances the blood pressure has returned to levels lower than it was before operation. In some instances, the drop in blood pressure as a result of the operation has been dramatic. The blood pressure of one patient, as an example, changed from a level of 230 mm. of mercury systolic and 130 diastolic, to one of 130 mm. of mercury systolic and 90 diastolic, as a result of operation, and remained at the latter level during the twenty-one postoperative days he was under my observation.

Concerning the surgical treatment of hypertension, all has not yet been learned. Further observation is necessary. It is impossible to be certain, yet, that complications of hypertension will not occur in spite of the lower levels of the blood pressure. Perhaps the blood pressure may eventually return to preoperative levels. The observation that the surgical procedures mentioned can be performed without serious harm to patients is important. The fact that lowering of the blood pressure to a level near normal does not handicap certain functions dependent on circulation is an important observation which should silence the criticism of attempts to lower the blood pressure in essential hypertension. Completion of each step in the carefully planned surgical attack on hypertension engenders confidence to proceed. The intention now is to operate on patients in earlier stages of hypertension, because it is in this phase of the disease that most should be accomplished. Observations on the surgical treatment of hypertension lead to the feeling that surgical treatment of the condition may be about to effect control of, or perhaps may even cure, essential hypertension.

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UTERINE HEMORRHAGE DUE TO ADNEXAL PATHOLOGY*

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Uterine hemorrhage is frequently met with in chronic and subacute salpingitis or oophorosalpingitis. But excessive uterine hemorrhage complicating adnexal pathology has not been common in my experience which at this time on account of our recent knowledge of hormonology is an interesting subject for our consideration. An evaluation of the causative factors is important, because it determines the treatment to be instituted.

For the purpose of this subject, I will present two cases.

Case 1.—B.Mc. Age 36 years. Widow. Family history negative. Personal history: menstrual; puberty began at the age of 13 years, 28 day type, flow 7 to 8 days, no clots. Past two years 14 to 21 day type, flow 8 to 10 days, moderate in amount, with clots. Tuberculous cervical adenitis and involvement of the upper lobe of the right lung after an attack of influenza in 1918. Spontaneous abortion between the fourth and fifth month followed by sepsis which lasted for three months in 1920.

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June 20, 1931 patient developed a moderate uterine hemorrhage for which a curettement was done. Microscopic diagnosis: Hyperplastic endometrium.

Patient consulted me on July 30, 1931, on account of profuse uterine hemorrhage, no abdominal pain, and marked evidence of secondary anemia. Patient was hospitalized. Blood picture: red cells 2,600,000, white cells 7,000, and the differential polymorphonuclears 70 per cent and lymphocytes 28 per cent. HB 55 per cent. A dilatation and curettage was performed and was followed by a direct blood transfusion of 460 cc. Diagnosis: uterine hemorrhage due to either an ovarian dysfunction or a left sided pyosalphinx. Microscopic diagnosis of curettement; slight evidence of hyperplastic endometrium, if at all, but the stroma edematous with some round cell infiltration. Uterine hemorrhage stopped and patient was discharged on August 7 greatly improved.

Patient was seen on August 11, stating that bleeding was slight for the past few days. The left sided mass felt somewhat larger. Advised laparotomy. On August 12 a laparotomy was performed which showed a left-sided pyosalpinx, the uterus was of normal size and of firm consistency, and a normal size ovary with no evidence of a macroscopic corpus luteum. Very few adhesions found. A left salpingectomy was done. Microscopic diagnosis: chronic suppurative salpingitis. Patient was discharged from the hospital on August 23 with the following blood picture: red cells 3,210,000, white cells 10,000 and a differential of polymorphonuclears of 89 per cent and lymphocytes of 10 per cent. Patient was in a good condition, except for the secondary anemia. Patient was examined three months later and found to be in good condition with no uterine bleeding since the laparotomy.

Case 2.—Mrs. C. S. Age 42 years. Married 22 years. Para 3. Family history negative. Personal history; menses since puberty 28 day type, flow 4 to 5 days, no pains or clots. Three normal pregnancies, labors, and puerpera. On July 20, 1933 patient was ill for a few days with chills, fever, and malaise. On July 31, noticed a thick, yellowish discharge which continued for four days and followed by uterine bleeding for which a dilatation and curettage was performed four or five days later with an arrest of the bleeding for six days.

Patient consulted me on September 4, com-

plaining of uterine bleeding for the past month. Patient showed evidence of secondary anemia, afebrile, pulse 110, but no abdominal complaint. Abdomino-rectal examination disclosed a normal anteflexed uterus and a sausage-like mass on the right side. Diagnosis: Uterine hemorrhage due to a chronic right salpingitis. Advised conservative treatment.

On September 6, patient developed a severe uterine hemorrhage and passed two large clots of blood. Patient was hospitalized. On entering the hospital the complaints were weakness, dizziness, and uterine hemorrhage. Temperature 99, pulse 96 and of good volume, and respirations 24. Blood pressure 130. Blood picture: red cells 3,680,000, white cells 10,500, and a differential of polymorphonuclears of 71 per cent and lymphocytes 24 per cent. H.B. 60 to 65 per cent. Diagnosis of uterine hemorrhage due to the right sided salpingitis. Conservative treatment.

The uterine hemorrhage continued so on September 9, I performed a supravaginal hysterectomy and a bilateral oophorosalpingectomy. Pathologic diagnosis: subacute to chronic salpingitis of the right fallopian tube: chronic salpingitis of the left fallopian tube. Uterus was of normal size and not vascular. Ovaries of normal size with no evidence of a corpus luteum macroscopically. On cross section the right ovary contained a corpus luteum cyst.

The postoperative course was complicated by a mild paralytic ileus. On September 16 the blood picture was: red cells 2,900,000, white cells 5,900, and a differential of polymorphonuclears of 38 per cent and lymphocytes of 48 per cent. A direct blood transfusion of 600 cc. was done. Patient rallied for a short time and died in eight hours probably on account of the blood transfusion. In retrospect I feel that this patient developed an attack of influenza in July and that the surgical procedures activated the residue of the infection in the pelvis to account for the postoperative blood picture and possibly a low grade peritonitis to account for the paralytic ileus.

The recent knowledge of hormonology has opened up a new field of thought of normal and abnormal uterine hemorrhage. In the biologic advances of hormonology, it may not be amiss to briefly discuss the various factors that may be responsible for abnormal uterine hemorrhage.

The work of Bonn-Fraenkel and Histchmann-Adler appeared to have settled the problem of uterine hemorhage as being due to ovarian dysfunction. Hitschmann-Adler through their work on the endometrial changes during the menstrual cycle insisted that inflammatory conditions of the uterus do not cause uterine hemorrhage, but the hemorrhage is due to a deranged ovarian function affecting the endometrium. Novak demonstrated that uterine hemorrhage due to ovarian dysfunction is characterized by a hyperplastic endometrium.

Clinical and operative experience cause us to inquire of the absence of uterine hemorrhage in highly vascular uteri from pelvic pathologic conditions. In spite of the above consideration, we know that uterine hemorrhage is present with and without the pathologic picture of hyperplastic endometrium which brings up the problem of the endometrium as a causative factor.

The role of the endometrium in the mechanism of uterine hemorrhage is not well known. We do know that the most intense hyperemia of the uterus associated with adnexal inflammation does not frequently cause uterine hemorrhage. Whether the endometrium *per se* plays a part in the coagulability or non-coagulability of the menstrual blood by a hormone or an enzyme is a question to be answered. The consensus of opinions is that the endometrial function for bleeding is dependent upon ovarian function. What part the reticulo-endothelial system plays when associated with adnexal pathology is another problem that will have to be worked out.

The ovarian factor leading to uterine hemorrhage is today bound up with the biologic study of the hormones of the pituitary gland. The work of Ascheim-Zondek, Smith, Engel, Hartman, and Corner has placed the mechanism of uterine bleeding on a biologic basis. The ovaries are dependent for their primary activity on the pituitary gland. Prolan A is the motor activator of the ovaries leading to Graafian follicle formation and the response of the Graaffian follicle formation is dependent upon the intensity of prolan A effect on the ovaries, probably on a quantitative basis. Prolan B is the luteinizing hormone, so that we may consider prolan A and B as antagonistic in their action on the ovaries. When the prolans are properly functioning, we have a coordinating response of the ovaries in which event the normal Graaffian follicle or follicles and the corpus luteum hormones act in a sequential

manner leading to a normal menstrual cycle. If, however, prolan A is not antagonized by prolan B then prolan A is out of control, so to speak, with the result we have an increase in the number of Graaffian follicles formed. This causes an hyperoestrogenic hormone action on the uterus with the resulting abnormal uterine hemorrhage on account of the absence of the inhibiting or luteininzing hormone, prolan B.

Hartman and Corner have demonstrated in the monkey that menstruation takes place without ovulation which is brought about by the direct action of the anterior pituitary hormone on the uterus. This has been conclusively shown in the monkey, because they have a menstrual phenomenon during the non-breeding season during which laparotomy has demonstrated the absence of Graaffian follicle or corpus luteum formation. This condition has been suspected to occur in the human. Therefore, we have to consider the direct action of the pituitary gland on the uterus (endometrium) in uterine hemorrhage.

What is the mechanism of uterine hemorrhage when adnexal pathology is present? Congestion of the uterus on account of adnexal pathology can be eliminated as a serious factor in excessive uterine hemorrhage. Pathologic conditions and neoplasms of the uterus will not be considered.

With our present interest in the progress of hormonology, we must carefully evaluate this factor in order to be rational in our therapy. What regulates the cycle of the anterior pituitary gland hormones or its activator, we do not know. But we do know that functional uterine hemorrhage is most frequently associated with the persistence of Graaffian follicle or follicles cysts, the absence of the corpus luteum, and the histologico-pathologic condition of hyperplastic endometrium; but no uterine or adnexal pathology, although both may be combined. The type of cases that I am presenting is definitely associated with adnexal pathology, for the pathologic study of the removed tissue demonstrates an activity of the tissue of recent origin. In view of the presence of recent definite adnexal activity, I am of the opinion that the hormones are not the causative factor of the uterine hemorrhage.

The endometrium is a factor to be considered, and I realize that at this time my opinion must be of a speculative character based on clinical experience of some years. The importance of the endometrium as the causative factor was impressed upon me some ten years ago by the following case:

Case 3.—Mrs. M.D., age 24 years, para 2. History not essential, except that I took care of the patient in her last pregnancy and labor. No pelvic pathology was found six weeks postpartum nor for some years after. The patient developed lower abdominal pains, rigidity, and tenderness, nausea and vomiting, and a mass in the lower left pelvic cavity. Rapid pulse and a temperature ranging between 101° and 102°, during an attack of influenza. The patient was hospitalized and by the fifth day the pelvic condition became so aggravated which demanded surgical interference in spite of the influenza. On laparotomy the uterus was found to be of normal size, and softer than normal, and vascular. The right tube and ovary were of normal size, but vascular. The left ovary was of normal size; and the left fallopian tube was markedly distended in a funnel-shape manner measuring about 13 cm. in length, and the fimbrial ostium dilated to about 8 cm. in diameter: the tubal lumen was filled with clotted blood, and some clotted blood free in the abdomen. A left sided salpingectomy was done and the patient made an uneventful recovery. Pathologic diagnosis: hemorrhagic salpingitis. Patient is pregnant at this writing.

Abortion has been frequently encountered complicating influenza. I have observed many cases of abortion with excessive uterine hemorrhage complicating influenza which necessitated immediate blood transfusion. These cases are characterized by a flaccid uterus and an absence of uterine colic. Immediate emptying of the uterus arrests the hemorrhage. This observation as to the histologico-pathologic findings of the endometrium will be reported in the future.

Influenza has in my opinion a predeliction for the endometrium which causes changes that are responsible for the permeability of the blood from its vessels leading to uterine hemorrhage of different degrees. During the year of 1918 and 1919, we know that influenza caused serious results to the pregnant woman in the death of the fetus, abortion or premature labor, and a high maternal mortality. The clinical manifestations of these cases are unknown to me, because I was with the Colors during that period. From the literature and information gathered from my colleagues, I have been informed that uterine hemorrhage was frequently found to complicate influenza.

If the endometrium is the causative factor, besides the cases of influenza, what is the mechanism of the bleeding? I realize that a constitutional or a local toxemia may involve the endometrium, ovary, or the anterior pituitary gland. It is also possible that a functional uterine hemorrhage may take place when adnexal pathology is present, but in my experience I have not found this coincidence in any given case. I have seen severe uterine hemorrhage on a functional basis during the menopausal stage, but Case 2 demonstrates that the latent adnexal pathology was activated by the pathologic diagnosis of subacute to chronic salpingitis which I interpret that the influenzal attack of July 20 was the cause. In view of my clinical experience with these cases, I am inclined to believe that the toxemia can affect any part of the Mullerian tract in either a normal or a pathological condition. Case 1 and 2 appears to have been an acute exacerbation of a chronic adnexitis which affected the endometrium as the cause of the uterine hemorrhage. Case 3 is a complicating hemorrhagic salpingitis in which the influenzal toxemia affected the left fallopian tube with the excessive uterine hemorrhage into the tubal lumen and the free clotted blood in the abdomen.

If we wish to assume the premise that the acute exacerbation of the adnexal pathology from whatever source is the factor of the uterine hemorrhage, what is the treatment? We must assume the premise that the bleeding is due to either the endometrium *per se* or hormones on the endometrium through the ovary or direct from the anterior pituitary gland, so that the treatment resolves itself into surgical or hormonal therapy. I am of the opinion that the treatment of this type of uterine hemorrhage is conservative or surgical. Many cases have been conservatively managed as acute exacerbation of chronic adnexitis with excellent results.

The cases that I have presented were cases of excessive uterine hemorrhage, and the diagnosis of adnexal pathology affecting the endometrium or an acute infectious disease involving the endometrium were carefully treated by conservative management, but when it threatened to develop into excessive uterine hemorrhage the treatment was laparotomy. When uterine hemorrhage complicates an abortion during an influenzal attack curettage may be necessary to prevent excessive uterine hemorrhage.

If the endometrium is considered as being secondary to hormone action then the hormone treatment may be considered. I have not treated any of these cases with hormone therapy and have had excellent results by the usual conservative management or laparotomy as indicated; and curettage and blood transfusion in cases of excessive uterine hemorrhage complicating abortions.

If we consider hormone therapy then prolan B is indicated. Prolan B is primarily indicated when luteinization is defective, but in my experience I have found no evidence that the absence of luteinization was a factor in any case, or I may state that I have found no evidence of persistent Grafian follicle cysts. In excessive uterine hemorrhage of the type that I am discussing the hormone action is too slow to attempt its use, for in serious cases the treatment must be laparotomy with or without blood transfusion.

In summarizing this type of adnexal pathology it is essential to evaluate the factor that causes the uterine hemorrhage for in the cases of excessive uterine hemorrhage any attempt to use hormone therapy, will in my opinion jeopardize the life of the patient.

CONCLUSIONS

1. Uterine hemorrhage is frequently caused by adnexal pathology.

2. I am inclined to believe that it is due to action of the adnexal toxin on the endometrium.

3. Hormone therapy is of no value in the treatment.

4. Excessive hemorrhage may necessitate curettage or laparotomy with or without a blood transfusion.

CHRONIC BRUCELLOSIS

Alice C. Evans, Washington, D. C. (Journal A.M.A., Sept. 1, 1934), summarizes the main facts relative to the incidence of chronic brucellosis as follows: 1. Contact with the casual organism is of common occurrence. 2. The severity of infection is known to vary from the acute disease to a form so mild that the subject is unaware of the illness. 3. Clinical diagnosis is extremely difficult, even in severe cases. 4. Brucella infection is known to occur in animals that appear to be healthy. 5. There exists in this country a common malady—the so-called neurasthenia —which in its clinical manifestations cannot always be distinguished from chronic brucellosis. These facts challenge the right of a physician to make a diagnosis of neurasthenia—a diagnosis regarded as dishonorable by the patient, and also by his family, his employer and his friends—without considering, among other possibilities, the possibility of chronic brucellosis.

ACHYLIA GASTRICA

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Medical literature in the past few years has been flooded by an avalanche of papers on the subject of achylia gastrica but as yet the true meaning and significance of this condition is very uncertain. The terminology of this syndrome has been used rather loosely by the profession, but in this discussion the term achylia gastrica will designate the original meaning given it by Einhorn who introduced the subject as "an absence of both free hydrochloric acid and ferments in the gastric juice." The term achlorhydria should, in my opinion, be strictly limited to the more frequently occurring condition in which only free acid is lacking in the gastric secretions.

Many years ago, chronic gastritis was a popular diagnosis for stomach complaints, but due to the rapidity with which postmortem digestion took place in the gastric mucosa the condition was difficult to demonstrate at the necropsy and the diagnosis gradually faded into the great heap of functional disorders.

The advent of subtotal gastrectomy and the development of an immediate tissue fixation technique by Knud Faber and his Norwegian associates revived interest in pathological conditions of the gastric mucosa, and reliable studies are now beginning to shed some light on chronic gastritis and its accompanying symptom, achylia gastrica. There is scarcely a reasonable doubt that the fibrosis following in the wake of the chronic inflammation of parenchymatous gastritis produces atrophy of the acid secreting cells of the stomach, but at the present time this process seems wholly inadequate in explaining the achylia of a great majority of the cases. In all probability there are numerous other factors playing a role in this dysfunction.

Ryle and Hurst have expressed the idea that cases of achylia gastrica can be divided into two groups. They consider one type as almost certainly hereditary and the other type represents the cases of extensive catarrhal condition of the gastric mucosa, previously described. They believe that in the hereditary type the gastric glands have never developed or functioned and in this group we find the individual who develops pernicious anemia. It seems difficult to agree with this assumption because most cases of pernicious anemia develop late in life and it would seem reasonable to expect much earlier manifestations of the disease if it were due to a congenital abnormality.

Since the advent of Beaumont's studies, gastric secretion has held the interest and attention of many worthy investigators. Almost as many different theories have been advanced as there are investigators in the field. Ivy has well summed up the subject by suggesting that the gastric secretory mechanism may be activated by one or all of several processes: direct stimuli by mechanical distention of the stomach; some chemical action on or via the gastric mucosa by certain substances; reflex nervous mechanisms through the cerebral cortex, thalamus, midbrain and medulla; or chemical action on or via the intestinal mucosa. From this summation one can readily see that so far, physiologists are still considering every possibility, from pyloric tone to secretogogue action as the governing mechanism of gastric secretion, true inflammation being the only remaining unquestioned factor responsible for achylia gastrica.

The secretions of the stomach are evidently not absolutely necessary for the immediate maintenance of life, as Dennig, Hartman, Hurst and others have reported cases of total gastrectomy on patients who lived one to ten years before developing a severe anemia. Apparently in these cases the intestinal tract, with the aid of the accessory digestive organs, took on the major stomach functions to a large extent.

Of utmost importance in a study of this subject is a reliable technique for making acid determinations. Here again we are confronted by some rather difficult obstacles. The regurgitation of the alkaline duodenal contents into the stomach is a hazard which not only makes it extremely difficult to estimate true acid values, but also may even neutralize all the acid secreted in cases of subacidity, and one will be unable to know whether we are dealing with a true or false achylia.

The late work of Van Zant, Alvarez and associates has at last given us in a measure some indication of what to expect as normal acid figures. They have made extensive studies of each sex at various age levels. Until the publication of these studies and statistics, what had been considered normal or abnormal determinations was in the strictest sense only an extremely

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rough guess. Their work is undoubtedly a great contribution to this subject and with this approach to the understanding of the normal, we are at last beginning to have some basis from which acid evaluations may have some definite meaning.

The Ewald meal, motor meal, alcohol meal and histamine test all have their staunch supporters. In my opinion, the use of histamine for testing the gastric secretory mechanism is one of the greatest contributions ever made to the study of the subject.

Our technique of acid determinations is the simple procedure of passing a Rehfuss tube into the stomach after an overnight fast and withdrawing a fasting specimen. Fifty cc. of seven per cent alcohol is then introduced into the stomach through the tube and specimens are withdrawn every fifteen minutes for one hour. If no free acid is found in any of the first three specimens, 0.25 mg. of histamine is given subcutaneously and specimens are withdrawn at fifteen minute intervals for another forty-five minute period.

Histamine is the most powerful stimulant known for gastric secretion and its use is the only procedure by which a true achylia may be differentiated from a false, a fact which in itself is of the greatest importance from a diagnostic standpoint.

Some investigators of this subject recommend the use of 1 mg. of histamine as the dosage necessary for accurate determinations. Gompertz and Cohen have adequately demonstrated that the much smaller dosage of 0.25 mg. was practically always sufficient and this dosage certainly has proven satisfactory in my work.

Flushing of the face, palpitation of the heart, smothering sensations, a fall in blood pressure, rapid pulse, and pulsations or throbbing in the head with slight headaches are systemic reactions that often follow the injection of 1 mg. These manifestations are greatly reduced by the use of the smaller dose.

Cases of hyperthyroidism should not be tested with histamine because one may encounter a vasomotor reaction of serious consequences. Because of the possible action on smooth muscle, pregnancy should also be considered a contraindication for the use of this drug.

In cases of marked subacidity we may not be able to determine the presence of acid secretion with histamine, because of the aforementioned rapid neutralization of the gastric contents by regurgitated alkaline duodenal contents. In these cases, neutral red may be a valuable adjunct as its presence in the gastric secretions would show that the gastric glands were functioning even though the acid had been neutralized. Neutral red has been advised by some authors as a routine procedure for the testing of glandular secretory ability but I believe that it should be used only as an adjunct measure because it does not possess the glandular stimulating qualities of histamine.

Hubbard, Munford and Allen carried out some extensive studies on the hydrogen ion concentration of the urine and its relation to acid secretion of the stomach. They report that the alkaline tide of the urine varied after meals containing different foodstuffs, similar to the variations obtained in the fractional gastric analyses after similar foodstuffs. The average values showed definite changes in urine specimens from patients who secreted more than the minimal amounts of hydrochloric acid and no changes occurred in patients who secreted little or no acid. This seems to be a rather laborious procedure but may prove a valuable aid in cases where determinations cannot be made by the usual present day technique.

Although this paper deals only with the secretory phase of the gastric mechanism, the fact must not be overlooked that the motor mechanism is also of equal importance and in any study of gastric function this phase should also be carefully analyzed and considered.

The symptomatology of achylia gastrica is extremely variable. Many cases undoubtedly present no symptoms and the patient is in good health. Bennet and Ryle have demonstrated achylia gastrica in four per cent of normal medical students and it undoubtedly occurs with increasing frequency in disease and advancing age. In some cases the symptoms are quite vague and of a functional nature while in still another group achylia gastrica is responsible for, or very closely allied with, specific syndromes of a definite systemic character to be discussed later. Achylia is often apparently responsible for annoying symptoms in conditions showing genuine pathological lesions.

Eructations of gas or bitter brash from the stomach, epigastric distress or fullness before, during or immediately after meals, bloating and excessive passage of flatus, nausea, headaches, and nervous fatigue are the usual formidable

array of symptoms encountered in the group of strictly functional digestive disorders.

Anemia, either the so-called simple achylic anemia that is non-pernicious, or typical Addisonian anemia, is one of the most frequent systemic syndromes encountered.

Knud Faber was first to describe the former type in 1909. He further elaborated on this subject in subsequent papers written in 1913 and 1924. He designated this condition as "achylia gastrica with anemia simplex", "anemia simplex in achylia gastrica", or simple "achylic anemia". Numerous other investigators have contributed to this subject under various titles. Nolen in 1925 speaks of it as "Chlorosis Chronica Tarda cum Achylia Gastrica"; Witts in 1930 named it "simple achlorhydric anemia"; Waugh in 1931 entitled it "Hypochromic Anemia with Achlorhydria"; Dameshek in 1931 discussed it under the caption of "Primary Hypochromic Anemia"; while Mills in 1931 has written on the subject under the title of "Idiopathic Hypochromemia".

This anemia, which has been described under such a wide range of titles, is a syndrome with well defined clinical characteristics, the principal features of which are true gastric achylia and hypochromic anemia. It is practically always encountered in women between 20 and 50 years of age. These patients present themselves with numerous complaints but the most frequent is extreme fatigue. Dyspepsia in the nature of epigastric fullness, eructations, flatulency and irregular bowel action are extremely frequent. Glossitis has not been a very consistent complaint in the patients I have observed but several cases have had crops of stomatic ulcers in the mouth. The premature graying of the hair and the spoon-shaped finger nails mentioned by Witts have not been constant findings in the cases I have studied.

Many patients afflicted with chronic anemia of this character show strong tendencies to functional nervous disturbances, rheumatism, and alimentary disorders.

The most characteristic features differentiating this anemia from pernicious anemia are the microcytic character of the cells and a low color index. The blood picture has shown extreme variations in the hemoglobin determinations and erythrocyte counts. The hemoglobin extremes in my cases varied from 26 per cent to 72 per cent, and the red cell counts ranged from 1,240,000 to 3,860,000.

Carcinoma and anemias due to other causes must be carefully ruled out before making a diagnosis of simple achylic anemia. Cases of leukemia, aplastic anemia, and secondary anemia due to parasitic infection usually show only a slightly higher percentage of achylia than is found in normal individuals. The presence of occult blood in the stool and, in women, a history of menorrhagia, must always be carefully considered before making a diagnosis of anemia due to achylia.

It has been pointed out by Sahli and others that iron salts are insoluble in alkaline solutions. The gastric juice normally maintains an acid medium in the upper intestines, therefore favoring the absorption of iron salts and, by the same token, in cases of gastric achylia favoring the development of anemia. In spite of these facts, patients with this type of anemia, although intractable to small doses of iron, clear up rapidly on larger amounts. Witts recommends the use of 30 to 40 grains of iron ammonium citrate three times a day. I have had one case recover after a single transfusion and it is my belief that many of these cases clear up spontaneously.

Hunterian glossitis is another finding frequently encountered in cases of true achylia as well as in pernicious anemia. I have under treatment at the present time a patient who in many ways exemplifies the usual symptoms and manifestations associated with achylia and glossitis. This patient is a man fifty-four years old who developed a very sore tongue six years ago. He complains bitterly of a stinging, burning, raw sensation of the tip and margins of the tongue. He thinks he is improved at the present time since his entire tongue was extremely red, swollen and tender during the first six months after the onset of his illness. He further states that his saliva seems to be thick and ropey, that he has constantly a bad taste in his mouth, and at times has pains in his throat and along his esophagus when swallowing. Sour, hot, or seasoned foods cause him extreme discomfort that may last several days.

With the exception of a severe glossitis, the physical examination of this patient is entirely negative. His tongue is slick and smooth and shows marked atrophy of the papillae. The tip and edges are bright red and quite tender.

The blood examination reveals a hemoglobin of 95 per cent Sahli with a red count of 4,720,000, and white blood cells 7,200 with a

normal differential count. There is no abnormality in the size or shape of the red cells.

He has had repeated gastric analyses with an alcohol meal and histamine. Free acid has never been found and the total acidity of his gastric contents has been low on all occasions. This case undoubtedly typifies in almost every respect the classical descriptions of glossitis associated with achylia gastrica.

Subacute combined degeneration of the spinal cord has frequently been discussed in regard to its association with achylia, achlorhydria and anemia. Lichtheim in 1887 described three cases of pernicious anemia with spinal cord symptoms. Postmortem studies in two of these cases showed degeneration of the posterior columns and, to a lesser degree, similar changes in the lateral columns. These observations were subsequently confirmed by Minnich in 1892 and Nonne in 1895. Risien, Russel, Batten and Collier in 1900 described nine cases of subacute combined degeneration of the cord. Some of these cases developed no anemia through the entire course of the disease, while others developed it only as a more or less terminal event. However, an article published by Collier in 1921 came to entirely different conclusions. He states rather frankly in his later publication that all cases of subacute combined degeneration of the cord, if closely followed, will demonstrate at various times blood changes that are identical with those encountered in pernicious anemia. Hurst and Bell pointed out in 1922 that subacute combined degeneration of the cord and pernicious anemia were dependent upon the same underlying pathological processes; that is, oral sepsis, achlorhydria and subsequent intestinal infection and intoxication, an etiological viewpoint which has, of course, become obsolete since the advent of liver therapy and the rather recent publications of the splendid work of Castles and associates on gastric studies in pernicious anemia.

In 1923, Douglas Vanderhoof reported 29 cases of combined sclerosis of the cord in 451 patients with achylia. Fourteen of these cases had pernicious anemia, one pellagra, in seven the observations were unsatisfactory and seven were pure cases of the combined sclerosis.

Usually the first symptoms of subacute combined degeneration of the cord are paresthesias of various types, particularly of the hands and feet with numbness and tingling of the fingers and toes. Band-like burning or cold sensations of the extremities are also frequent complaints. These manifestations may go on for years before the subsequent development of disorders of the deep sensibilities with loss of the localization faculty and subsequent ataxia. The spastic disorder with exaggerated reflexes and incoordination is sooner or later followed by a flaccid paralysis with lost reflexes, muscular weakness, spinchter symptoms, decubitus ulcers, and complete anesthesia. I have had an opportunity to follow several of these cases and all of them have eventually developed a more or less typical blood picture of pernicious anemia. We know achylia develops in a great many cases years before any changes are noted in the blood picture. Therefore, it would not seem unreasonable to assume that the same etiological factor might also produce cord changes many months or years prior to the anemia. Pernicious anemia is undoubtedly a generalized systemic disease in which the blood changes are oftentimes only the terminal event in its course.

It is interesting to note that as long ago as 1910, Collier summarized the relationship between the cord lesions and pernicious anemia as follows: "The anemia and the spinal degeneration are therefore related, not as cause and effect but as concomitant effects of a single fundamental pathological process which in the present state of knowledge must be hypothetical." All of us have seen cases of subacute combined degeneration of the cord develop synchronously with pernicious anemia, and no doubt many of us have seen cases time and again that demonstrated the cord lesion or the achylia or the glossitis or the entire triad long before the development of any blood changes.

In the literature and textbooks and in most of the writings on achylia gastrica, gastrogenous diarrhea receives almost unlimited discussion as a frequent symptom in achylia. I am unable to understand why this symptom has received so much attention. It has been one of the most infrequent complaints in the several hundred cases I have had an opportunity to observe. When it does occur, it is usually rather characteristic. The patient most frequently gives a history of five to eight stools in the first two hours after breakfast. Occasionally they have one to three loose stools after each meal, and once in a while the patient will complain of almost constant diarrhea, but this is exceptional. Morning diarrhea is the characteristic feature. Many of these cases also complain of griping pains across the

lower abdomen, burning painful sensations in the rectum, and tenesmus. The passage of mucus is practically always excessive and this usually causes the patient considerable anxiety concerning his condition.

I am of the opinion that the frequency of this diagnosis is often due to insufficient study and observation of the patient, since I have seen several early cases of idiopathic ulcerative colitis that showed transitory achlorhydria. I have under observation at the present time a young woman who gives a history of having had four to six loose stools a day for the past four years. Six months ago she developed an acute exacerbation of the trouble with twenty to thirty stools a day, passing excessive mucus and some blood per rectum. The mucosa of the rectum and sigmoid in this case is granular, hyperemic and swollen. As yet she does not present the classical picture of idiopathic ulcerative colitis, but I have no doubt that she will ultimately develop this condition. When this patient was first seen, there was no hydrochloric acid in the gastric secretion with the alcohol meal and it was my impression that I was dealing with a case of frank achylia with diarrhea. The patient was given large doses of dilute hydrochloric acid with no improvement. Three months later the gastric analysis was repeated and small amounts of free hydrochloric acid were found. The following week another gastric analysis was done with histamine and a normal acid curve was obtained. This patient illustrates how one might be misled in a diagnosis of diarrhea due to achylia if insufficiently studied, as I was dealing with a true case of idiopathic ulcerative colitis, the achlorhydria being only a temporary condition.

Quite frequently we encounter achlorhydria in cases of diarrhea due to intestinal parasites or other infections. Usually the achlorhydria is transitory and improves with the correction of the intestinal disorder.

In recent years Warburg and Jorgensen have published several articles on the subject of "psychoses and neurasthenia associated with achylia gastrica and megalocytosis and the relation between this syndrome and pernicious anemia." I have frequently encountered patients with achylia gastrica who complained bitterly of extreme fatigue. These individuals have had a very definite lowered threshold for physical or mental effort, but I have never observed the psychoses described by these authors except in advanced cases of pernicious anemia.

Seven years ago I became interested in a group of patients whom I chose to classify under a working diagnosis of pre-anemic pernicious anemia. These patients all had a true achylia and most of them presented some other suggestive clue, such as transitory sensory disturbances of the hands or feet, or a vague history of glossitis. In some of the cases I thought there was a slight atrophy of the tongue even though there was no glossitic history. Several of the cases demonstrated from time to time a slight increase in the individual red cell volume although this was not a constant finding in all cases nor in the same case on repeated examinations. Blood studies on some of the patients in this group showed a very slight polycythemia with erythrocyte counts ranging from 5,000,000 to 6,000,000 cells with hemoglobin percentages over 100. It has been very interesting to observe the gradual, yet progressive development of genuine pernicious anemia in some of these cases. There is no doubt in my mind that the old expression that "coming events cast their shadows before them" is very true in pernicious anemia, and that the day is not far removed when the careful observer will diagnose Addisonian disease years and months prior to the onset of the characteristic blood changes.

CONCLUSIONS

Anemia (either hypochromic or pernicious), Hunterian glossitis and subacute combined degeneration of the spinal cord are definite systemic syndromes often encountered in cases of achylia gastrica.

Gastrogenous diarrhea is one of the most infrequent complaints in a study of a large series of cases of achylia.

The use of histamine and neutral red is probably the best method by which a true achylia may be determined.

Careful study of the history, symptomatology and blood findings in patients with achylia will probably lead to a diagnosis of impending pernicious anemia in many cases long before the manifestation of the characteristic blood changes.

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THE CAPILLARY BLOOD PRESSURE IN NORMAL SUBJECTS AND IN PATIENTS WITH ARTERIAL HYPERTENSION

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The results of capillary blood pressure measurements as made by several investigators[2, 8, 11, 12] have been quite variable, and have been subject to considerable controversy. Numerous methods have been devised and each has received more or less criticism as to its accuracy and its adaptability for clinical investigation.

The purpose of the present investigation was to make a comparative study of the capillary pressure in three groups of individuals: (1) persons with normal cardiovascular systems; (2) patients with benign hypertension and, (3) patients with malignant hypertension.

The literature on this subject, which includes a description of the various methods, has been reviewed by Danzier and Hooker[2] and more recently by Strax and De Graff.[12]

METHODS

The methods of measurement of capillary pressure fall into two classes: (1) the direct and (2) the indirect. The direct method is obviously the most accurate, but unfortunately is not adaptable to clinical use.[6] The indirect method of measurement of capillary tension falls into three general types: (A) the method in which the estimation of pressure depends upon the balancing of skin as the end-point[3, 5, 7] (B) the second method which requires perforation of the skin and measurement of the pressure of the blood as it flows from the puncture wound; and (C) the third method, that employed for this work which depends upon microscopic visualization of the capillaries of the skin, using as the end-point some phase in cessation of the flow of blood, produced by causing pressure to bear upon the part of skin overlying the capillaries to be examined.

Numerous types of instruments[2] have been devised to produce the desired pressure at the nail fold in measuring capillary pressure according to the third method. The majority of these devices have been too complicated or too cumbersome for practical work. The apparatus used in this study, was the clinical capillary tonometer, devised by Strax and De Graff (1931). This instrument is accurate and well adapted for clinical use. The apparatus consists of a lever, a spring, a finger rest, and a scale. The lever is approximately 20 cms. long. At one end it contains a circular plate of glass, to which is attached a smaller plate of glass, 2 mm. in diameter. Between the glass and the fulcrum, a screw is inserted into the lever which has attached to it a spring, the other end of which is attached to the base of the instrument. On the lever rests a movable rider, used in calibration of the instrument. The pointer of the lever is close to a vertical scale. A rest is provided for the finger, which can be raised or lowered at ease in a vertical plane to bring the latter into proper relationship to the glass. The instrument is made to fit the base of a Bausch and Lomb capillary microscope. Reflected light is used, the source being an electric bulb and condenser attached to the low power objective of the capillary microscope. The light passes through a green filter and is concentrated at the desired point of examination. The complete apparatus is pictured in Figure 1. The instrument is calibrated so that each millimeter on the scale equals a pressure of 2 mm. of mercury.

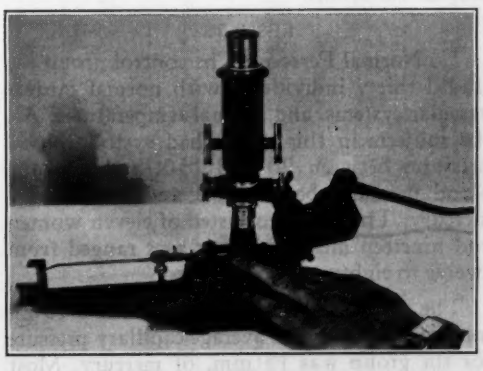

Fig. 1. Clinical capillary tonometer (Strax and DeGraff) mounted on base of Bausch & Lomb capillary microscope.

A typical reading is taken as follows: the patient is usually lying at rest in bed. Constant room temperature is maintained. The fingers should be warm. The left hand is used, well supported at heart level, to obviate differences due to hydrostatic pressure. A drop of cedarwood oil or glycerin is placed on the finger at the nail fold. The finger is placed on the rest, and raised by means of the screw so that the glass comes in contact with the skin at the nail fold. The light is adjusted and the microscope focused on the capillary bed through the glass. Pressure is applied by means of a screw. When the end-point is reached, the capillary blood pressure is read directly off the mirrowed scale in millimeters of mercury. In this series of cases, many capillaries were observed on two or three fingers, and only the most frequently recurring readings were read and recorded, thus giving us the mean capillary pressure for the subject tested.

The criterion used in determining the end-point is the amount of pressure necessary to cause an initial slowing or alteration in the velocity of the blood flowing through superficial medium-sized capillary vessels. The end-point is not difficult to determine, as appreciable slowing occurs rather suddenly. The velocity of flow is little impaired until a certain amount of pressure is applied when a rather sudden slowing is observed. Using the above method for determining the end-point, Strax,[12] Danzier, and Hooker,[2] and Boas and Mufson,[1] have pointed out that skin texture and elasticity played no appreciable part in the indirect measurement of capillary pressure. Danzier and Hooker have shown that, under standard conditions, there is no variance of capillary pressure from hour to hour and day to day and no diurnal variations.

RESULTS

1. Normal Persons: The control group included thirty individuals with normal cardiovascular systems, and normal temperatures. All the subjects in this group had systolic blood pressures between 90 and 150, and diastolic blood pressures between 50 and 84 mm. of mercury. The group consisted of eleven women and nineteen men, and their ages ranged from twelve to eighty years.

The capillary pressure varied from 8 to 24 mm. of mercury. The average capillary pressure for the group was 15 mm. of mercury. Most of these normal subjects showed capillary pressures measuring between 16 to 20 mm. of mercury. The capillary loops as observed at the nail fold, were of the straight hairpin variety, however, in older individuals, numerous convoluted loops and other irregular forms were frequently observed. The values for normal capillary pressure found in this series were somewhat lower than those reported by other writers who have used similar methods. This may be explained in part, at least, because the values reported here represent the mean capillary pressure, whereas the figures reported by others represent average capillary pressures.

2. Patients with Benign Essential Hypertension: The cases of benign hypertension were all of the essential (primary) type, accompanied by adequate cardiac, cerebral and renal function at the time of examination. The average systolic blood pressure was 192, and the average diastolic blood pressure, 112 mm. of mercury. The average degree of peripheral arteriosclerosis in these patients was grade 1+. The ophthalmoscopic examination, in the majority of cases, showed a slight to moderate degree of retinal arteriosclerosis. In no case was retinitis or papilledema present. The average age of this group was fifty-three years.

In the thirty-six patients with benign hypertension the capillary pressures varied from 8 to 22 mm. of mercury. The average capillary pressure for the group was 16 mm. of mercury. The close agreement between these figures, and those observed in normal subjects is evident and allow the assumption that the capillary blood pressure in benign hypertension is normal. The capillary morphology in this group differed only slightly from that found in normal subjects. In about one fourth of the cases, definite narrowing of the arterial limb of the capillary loops was observed. In several cases, the capillaries were tortuous and convoluted, but this also was observed equally often in normal middle-aged persons. Intermittency of the blood flow was noted in a few cases. The majority of patients with benign hypertension had normally configurated capillary loops.

3. Patients with Malignant Hypertension: In the cases of malignant hypertension, the diagnosis depended largely upon the appearance of the retina on ophthalmoscopic examination. All the patients included in this group had definite papilledema with varying degrees of retinal sclerosis, endarteritis, exudates and hemorrhages. The blood pressure readings in this group tended to be higher than those of the be-

nign hypertensive group, averaging systolic blood pressure of 217 mm. and diastolic pressure of 134 mm. of mercury. The peripheral arteriosclerosis averaged grade II+. The renal function, according to the urea clearance and the phenolsulphonphthalein excretion tests, was lowered but adequate in most cases. In only two cases was the urea clearance below the critical level. The average age of these patients was forty-nine years. With one exception, the erythrocyte count and the percentage of hemoglobin in the blood were within normal limits.

In sixteen cases of malignant hypertension, the capillary blood pressure varied from less than 4 to 32 mm. of mercury. The average capillary pressure for this group was 25 mm. In four of the cases, the capillary blood pressures were slightly elevated but within the limits of normal. In one case the capillary blood pressure was below 4 mm. of mercury and there was almost complete stasis of blood flow through these vessels. In several cases, intermittency of blood flow was observed; this was so extreme in one case that the capillary pressure could not be determined. In ten cases the capillary blood pressures were definitely elevated above the upper limits of normal. On the whole, capillary blood pressure measurements in this group were found to be higher than those observed in normal subjects and in patients with benign hypertension. Examination of the capillaries at the nail fold frequently revealed tortuous and convoluted loops. The blood flow in many cases was distinctly abnormal. In several cases the flow of blood appeared to be restricted only to a few functioning capillaries; the remainder contained blood, but were functionless. A constriction of the arterial limb was noted in some cases and dilatation of the venous limbs was observed in others. In many cases a generalized constriction of the entire loop was present, making capillary pressure measurements extremely difficult because of the marked reduction in the capillary diameters.

The values of the capillary pressure together with the pertinent clinical and laboratory findings, for the three groups are presented in tables I, II, and III. Table IV is a summary of the average values of the preceding tables. Figure 2 shows the comparative distribution of the capillary pressure measurements in the three groups tested. The results obtained in these three groups are entirely comparative, and no claim is made that these figures represent the actual values for capillary pressure.

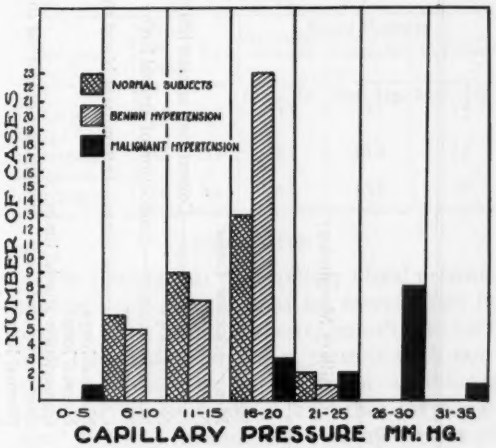

Fig. 2. Frequency distribution of capillary pressure measurements in normal subjects, and in patients with benign and malignant hypertension.

TABLE I

Normal Subjects

No.	Age	Sex	Blood Pressure		
			Systolic	Diastolic	Capillary
	years		mm. Hg.	mm. Hg.	mm. Hg.
1	26	F	96	64	12
2	24	F	110	72	16
3	27	F	106	64	18
4	19	M	118	76	16
5	30	M	126	76	16
6	26	F	126	76	10
7	28	M	120	76	18
8	27	M	126	70	16
9	43	M	130	70	16
10	42	M	90	50	8
11	12	M	90	50	10
12	13	F	96	50	8
13	26	M	120	70	10
14	27	M	120	70	18
15	27	F	90	56	12
16	26	M	106	68	20
17	30	M	116	70	12
18	57	F	130	74	12
19	45	M	130	84	22
20	60	M	126	80	14
21	73	M	150	80	18
22	80	F	150	70	12
23	74	M	150	70	18
24	72	M	130	70	8
25	57	M	120	70	18
26	63	M	126	70	24
27	80	M	120	70	12
28	32	F	112	74	20
29	37	F	150	80	14
30	32	F	126	70	14
Av.	41		113	73	15

TABLE II

Observations on Patients With Benign Hypertension

No.	Age	Sex	Blood Pressure			Peripheral Arterio-sclerosis	Ophthalmoscopic		Capillary Morphology
			Brachial						
			Systolic	Diastolic	Capillary		Retinitis	Sclerosis	
	Years		Mm. Hg.	Mm. Hg.	Mm. Hg.	Grade	Degree	Degree	
1	65	F	160	90	12	II	0	0	Normal loops
2	74	M	160	95	18	III	0	I	Many corkscrew forms
3	59	F	170	90	16	I	0	I	Normal loops
4	36	F	185	95	19	II	0	0	Few convoluted loops—Constriction arterial limbs
5	58	M	195	115	10	II	0	I	Normal loops
6	39	M	205	135	14	III	0	I	Marked tortuosity—constriction of arterial limbs
7	47	F	145	100	22	I	0	0	Normal loops
8	43	F	200	120	20	I	0	I	Constriction arterial limbs—intermittent blood flow
9	42	M	200	125	20	I	0	0	Normal loops
10	64	F	210	118	18	II	0	I	Normal loops
11	41	M	200	110	20	0	0	I	Constriction arterial limbs
12	61	F	180	94	20	II	0	I+	Few convoluted loops—constriction of arterial limbs
13	67	F	250	95	20	II	0	0	Normal loops
14	62	M	175	84	16	II	0	0	Few corkscrew forms
15	70	F	190	100	16	II	0	I+	Normal loops
16	42	F	200	120	16	I	0	I	Normal loops—few functioning loops
17	62	F	230	120	10	II	0	0	Normal loops—intermittent blood flow
18	61	F	200	105	10	II	0	0	Normal loops
19	46	M	190	125	16	I	0	I	Finely constricted arterial loops
20	56	F	190	95	8	I	0	I	Numerous convoluted loops—constriction of arterial limbs
21	66	M	220	105	18	IV	0	I	Normal loops—flow sluggish
22	51	F	192	100	16	0	0	I	Constricted arterial limbs
23	33	F	185	130	17	II	0	I+	Numerous corkscrew forms—intermittent blood flow
24	58	M	184	105	18	II	0	I	Few convoluted forms, dilated venous limbs, flow sluggish
25	25	F	245	140	19	II	0	I+	Long narrow loops
26	55	F	250	140	12	II	0	I	Normal loops
27	52	M	190	120	18	III	0	II+	Slight tortuosity
28	50	F	174	104	14	0	0	I	Normal loops
29	54	M	170	105	14	I	0	I	Normal loops
30	61	F	182	100	20	II	0	II+	Normal loops
31	59	M	180	104	14	I	0	I+	Normal loops
32	49	F	210	110	14	I	0	I	Poor filling of loops
33	55	M	200	105	18	I	0	I	Constricted arterial limbs
34	58	M	160	96	18	III	0	I	Normal loops
35	49	F	210	110	10	II	0	I+	Normal loops
36	40	F	220	110	16	I	0	I+	Normal loops
Av.	53		192	112	16	I+			

TABLE III

Observations on Patients With Malignant Hypertension

No.	Age	Sex	Blood Pressure		Capillary	Peripheral	Ophthalmoscopic		Capillary Morphology
			Brachial			Arterio-			
			Systolic	Diastolic		sclerosis	Retinitis	Sclerosis	
			Mm. Hg.	Mm. Hg.	Mm. Hg.	Grade	Degree	Degree	
1	45	F	265	140	?	III	II++	III	Markedly intermittent blood flow—unable to determine capillary pressure
2	46	F	200	102	27	II	II++	I	Normal loops
3	55	M	208	112	25	II+	I	I+	Some intermittent blood flow. Numerous convoluted forms
4	55	F	190	110	29	II	II +	II+	Long straight narrow loops
5	52	F	240	125	27	II	I	III	Constriction of arterial limbs. Rapid flow
6	48	M	210	135	30	IV	III	III	Constriction of arterial limbs. Dilatation of venous limbs
7	66	M	200	100	28	III	I	I+	Tortuous loops, many corkscrew forms
8	44	M	200	130	20	I	1	III	Few convoluted forms
9	53	F	155	105	28	III	1+++	II	Constricted arterial limbs, rapid flow
10	67	F	198	115	28	II+	1++	III	Poor filling of loops, numerous convoluted forms
11	43	M	260	184	30	III	II+	III	Numerous convoluted loops
12	42	F	222	160	—4	II+	II	III	Marked cnvolution of loops, almost complete stasis
13	23	F	265	145	20	II	II ++	I	Normal loops
14	52	M	210	140	22	IV	II+	I+	Some tortuosity of loops
15	34	M	205	130	20	I	I+	II+	Normal
16	48	M	300	165	32	II	III	I+	Arterial and venous limbs dilated and tortuous
Av.	49		217	134	25	II+			

TABLE IV

Table of Average Values

Subjects	No. of Cases	Age	Blood Pressure		
			Systolic	Diastolic	Capillary
			Mm. Hg.	Mm. Hg.	Mm. Hg.
Normals	30	40	113	73	15
Benign hypertension	36	53	192	112	16
Malignant hypertension	16	49	217	134	25

DISCUSSION

The finding that the capillary blood pressure measurements and the capillary morphology in patients with benign hypertension differs very little from that observed in persons with normal cardiovascular systems is in accordance with the results reported by other investigators.[1, 3, 9, 10] This indicates a normal status of the circulation in the capillaries in spite of the elevated arterial blood pressure in these patients. Thus the resistance in the vascular circuit, in hypertension of this type is not in the capillary portion of the vascular tree, but must be present somewhere proximal to these vessels. Ellis and Weiss,[3] have shown that the resistance lies in the arteriolar portion of the arterial system.

The explanation for the high capillary blood pressure findings found in malignant hypertension must be made on a purely hypothetical basis. The diastolic blood pressures in this group were higher as a rule than those observed in the group with benign hypertension. However, there appeared to be no definite relationship between the magnitude of the pressure in the capillaries and that of the diastolic pressure in the brachial arteries. There was no association of the finding of increased capillary blood pressure with any signs of renal failure, although in a few cases renal damage was evident.

Increase in the capillary blood pressure can only be brought about by (1) active vasodilatation of the arterioles and precapillary vessels, (2) increase in the venous pressure with a damming back of the blood into the capillaries and, (3) by actual vasoconstriction of the capillaries themselves. A dilatation of the arterioles would appear to be unlikely, for in hypertension peripheral vasoconstriction of these vessels is generally thought to be the mechanism in operation. An increase in the venous pressure could not have been a responsible factor as this was evident in only one case, in which the patient

presented signs of congestive heart failure. The only plausible explanation would appear to be that of capillary vasoconstriction. The capillaries are known to be capable of independent vasoconstriction by means of their contractile Rouget cells, and it is quite possible that in malignant hypertension, there is a generalized vasoconstriction affecting the capillaries as well as the arteries and arterioles. The frequent finding of irregularly convoluted capillary forms and abnormalities in the capillary blood flow, would be suggestive of the presence of increased stress and strain in these vessels.

Histologic studies on the capillaries in malignant hypertension, show no actual structural changes in the walls of these vessels, according to Keith, Wagener and Kernohan.[4] They report striking medial hypertrophy and diffuse changes in the walls of small arteries and arterioles. The high capillary pressures observed in the present investigation could be due to presence of structural changes in the arterioles, making these vessels equivalent to a set of rigid tubes that would be less effective in reducing the head of pressure existing in the larger vessels and thus allowing a greater impact of pressure against the capillaries. Any one or a combination of these factors might possibly explain the increased capillary blood pressure in malignant hypertension.

(References on Page 438)

ASTHMA DUE TO HOUSE DUST

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House dust may be either a primary cause of respiratory allergy, that is, capable of initiating symptoms by itself or it may be a secondary factor, that is, it produces symptoms only in combination with other etiologic agents. The following case record illustrates asthma due to primary house dust sensitization.

Miss E. E., aged 30, was seen in November, 1932, because of perennial asthma and vasomotor rhinitis dating to early childhood. These diseases were worse during the winter months.

Physical examination revealed an increase of the anterior-posterior diameter of the chest and some rounding of the shoulders. The inferior turbinates were large, boggy and bluish gray in color.

Skin tests were made to the various foods, epithelials, dusts and pollens, with many definite reactions. Treatment was outlined on the basis of these reactions and she was instructed to keep a diary. There was immediate, but not complete improvement. A study of her diary indicated the following facts: (1) She was always worse in her home (2) She always improved while out of the house, or upon leaving home, regardless of the temperature outside. (3) There was a definite increase of wheezing when she sat in one particular chair; when about the davenport and upon retiring. (4) Dusting and sweeping increased symptoms.

These four facts with the history of improvement during the summer suggested house dust sensitization and fourteen samples were collected according to the method of Cohen.[1] Scratch tests were positive to four, and intradermal tests demonstrated that 0.05 cc. of the 1:10,000 dilution would produce both asthma and vasomotor rhinitis.

Treatment with this extract along with food elimination produced definite improvement until in March, 1933, when she had difficulty again. These attacks were due to milk and upon its elimination she improved and since then has been practically free of symptoms the past 20 months.

COMMENT

The cardinal symptoms of house dust sensitization are well illustrated by the four observations in this patient's diary and the history that symptoms are worse in the winter.

In this instance sensitivity to house dust was suggested by certain features of the history. While this probability was enhanced by scratch reactions to the various samples of dust, the diagnosis was based upon the fact that the original symptoms could be reproduced at will, by injection of the dust extract.

The composition of house dust is such that it is apt to give reactions in many individuals. This is especially true with intradermal tests. Unless one can obtain scratch positives and there is a history of house dust sensitization, skin tests should not be considered significant.

We wish to emphasize the importance of the diary kept after the patient had started treatment based upon skin tests. Masking of some etiological factors by the effects of multiple sensitizations is very common. It is only after some of the specific factors have been removed, that the relation of cause and effect of many others are first revealed.

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EDITORIAL

Editorial Mast Information on Page VI

THE NOVEMBER JOURNAL

The editorial board has made certain changes in content and style in this issue of the JOURNAL, subject to your approval. These have been adopted after a thorough study of other available medical publications and an effort has been made to consolidate traditional ideas, original ideas, and ideas of others. Although changes are frequently a matter of opinion, with the new not equal to or better than the old, it is believed that advancement comes only through a process of trial and error.

You will note that the type has been slightly varied, since it was believed space could be conserved without sacrificing readability. Several sections have been omitted to make more space available for original articles. Scientific articles and news material have been differentiated by a section of "News Notes." The editorial section will contain invited and contributed editorials in the interest of creating a forum for members. Advertising has been rearranged to afford stronger appeal to advertisers with the hope of ultimate increased revenue.

Other additions are contemplated, but could not be perfected at the present time, pending settlement of certain problems. A new cover, for instance, without front advertising, will appear on the January issue. Several new sections are being considered, and additional pages are desired as soon as financially possible.

The board hopes you will like the new edition, and invites your suggestions and criticisms.

ASSOCIATE EDITORS

A perennial problem concerning state medical journals is the varied interests of different localities, and a difficulty always present is the issuance of a publication universal in appeal and representative of all sections of a state.

In an effort to solve this difficulty, a plan was adopted whereby a staff of associate editors, from all parts of the states, was selected to act as representatives of the JOURNAL in their area, to assist in securing worthwhile material from members, and to take as their personal responsibility the certainty that all parts of the state are equally represented.

Details in connection with actual issuance of the JOURNAL will, by necessity, fall upon the editorial board, but through mediums of correspondence and occasional meetings it is thought the above objective can be attained.

The following members of the Society have accepted appointments as associate editors, and it is desired that their services be utilized to the fullest extent.

Murray Eddy, M.D., Colby
C. L. Hooper. M.D., Dodge City
H. E. Marchbanks, M.D., Pittsburg
Donald N. Medearis, M.D., Kansas City
Philip W. Morgan, M.D., Emporia
Fred J. McEwen, M.D., Wichita
L. S. Nelson, M.D., Salina
R. T. Nichols, M.D., Hiawatha
Thomas G. Orr, M.., Kansas City
George Paine, M.D., Hutchinson
John N. Sherman, M.., Chanute
Howard E. Snyder, M.D., Winfield

PROFESSIONAL CARDS

Considerable consideration has been given to the pros and cons of continuing the section of professional cards in the JOURNAL. The main argument in their favor has been that a certain amount of income is received from their source. The rebuttal is that it is not democratic, since all cannot use the space, and that it is an additional tax on members who are already supporting the paper through their dues. It has finally been decided to discontinue this advertising section with the January issue, at which time refunds will be made on unexpired contracts. In the meantime contracts expiring will not be renewed. It is hoped that this change will meet with the approval of the Society.

HOBBIES

The doctor's avocation is an important topic for consideration. Physicians should cultivate some interest apart from their work. But unless leisure is planned and self discipline exercised, the medical man can seldom become proficient in an avocation without sacrifice. Self expression through the creative arts and crafts should be found often among members of a profession as high in intellectual interest as that of medicine. "Man is only half himself, the other half is his expression."

Today, in the United States we are seeing a revival of art and a growing emphasis upon the importance of art, not for the critic and the "arty," but for all who are capable of deriving spiritual nourishment through the beautiful.

There are many eminent examples of high attainment in the arts by members of our profession. Doctor Frederick Banting is considered an exceedingly competent painter in oils. Doctor John Oliver, a physician and teacher in Baltimore, is the author of several highly successful novels. Sir James MacKinsey, one of the busiest of physicians, wrote three or four novels during his most active years.

There can be no doubt that there are many Kansas physicians who practice an art or craft in their leisure hours. This should be encouraged. It should be given official encouragement by the State Medical Society. We suggest that at the next state meeting, a space be given for an exhibition of the art work of members of our state Society.

THE PHYSICIAN AND HIS HOSPITAL

The hospital holds quite a unique position in any community. It is a non-partisan organized health center to the populace which it serves. Its doors are open at all times to aid in the betterment of the health of its community, both through its physical facilities and its organized staff. The public expects all of the hospital. We, as physicians, associated with the hospital either as a member of its regular or courtesy staff expect too much of the hospital. We expect the hospital to welcome our patients with open arms, feed them, clothe them, and to administer to their wants without much consideration as to when and how the bill is going to be paid.

An individual who has been a patient in a hospital and has left without paying his bill is a charity patient. He is a liability as far as the hospital is concerned. Possibly the entire bill has to be collected through a collection agency at the rate of 50 per cent. Still the patient is a liability for he owes the hospital for services for which it has not been duly reimbursed, and the physician should not object to the hospital authorities placing the patient in accommodations suitable to their means or desire to pay as long as such accommodations are not incompatible with the physical welfare of the patient.

Each hospital has certain regulations drawn up in accordance with suggestions of the American Hospital Association, the American College of Surgeons, and certain local considerations peculiar to the community and the medical staff it serves. These regulations cover service, medical records, visiting hours, accommodations for extra individuals remaining with the patient and many others too numerous to mention. The physician should acquaint himself with these regulations and follow them to a letter. Hospital medical records are required by the hospital for the purpose of defending itself and the physician attending a patient against legal claims, to determine the rating of individual physicians on the staffs from the standpoint of efficiency of diagnosis and efficacy of treatment and to maintain the rating of the hospital as outlined and rated by the American College of Surgeons. Records should be completed promptly and thoroughly for time erases from the mind of the attending physician many rather important details, which may be of utmost importance should legal proceedings be instituted. Any special requests by the family or friends of a patient should be directed by the physician to the managerial staff of the hospital unless he is absolutely sure that such a request does not violate the rules of that hospital.

The fact that a physician is a member of the

staff of a reputable hospital gives him a certain standing in the community. The hospital stands back of a physician in his professional relationship to the patient. So why don't we as physicians stand back of the hospital instead of putting it and its managerial force on the spot?

FALSE AND MISLEADING MATERNAL STATISTICS

Condensed from an editorial in Illinois Medical Journal

Any comparison of international mortality statistics is ridiculous unless a standard international yardstick is used in the computations of the statisticians. In 1926, publication 158, written and published by Robert Morse Woodbury, Ph.D., was issued and entitled "Maternal Mortality." On page 58 of this pamphlet appears this apologetic statement: detailed study of the results, applying the United States rules instead of the English rules to the deaths in England and Wales in 1920, indicate that the rate in England and Wales would have been increased by about 15 per cent if the United States rules had been applied.

Now in 1920, in the United States, deaths incidental to child birth totaled 7.99 per 1,000 women who survived confinements. The figure in England and Wales totaled 4.33 per 1,000 by English rules. When the United States rules are applied to the rate in England and Wales, the mortality is raised to about 5 per 1,000. This is still some 3 per 1,000 higher in the United States than in any theoretically comparable country.

But bear in mind that this difference lies largely in the yardstick rather than in the cemetery. The United States is handicapped by a large negro population, existing as a poor material risk because of contracted pelves due to rickets, to the poor general state of hygiene and to the incidence of venereal disease, always high in the colored race. Compare the figures that show that in 1921 among the white people the maternal mortality was 6.6 per 1,000, and among the negroes 10.8 per 1,000.

Another idea for the distortion of the American mortality statistics lies in the fact that statisticians in Washington fail to differentiate between the deaths from natural confinements and deaths from abortion, of which in this country a great number are performed. Many women attempt abortion upon themselves, involving a hazard equivalent to suicide. The risk is scarcely lessened at the hands of law breaking physicians or midwives. Dr. Julius Levy of the Newark Health department after investigation of the local mortality for the years of 1924, 1927 and 1928 came to the conclusion that in the cases that he investigated abortion caused maternal death in 20 per cent of all cases and 60 per cent of all cases under six months. These deaths do not form any part of the normal hazard of giving birth to children and should be tabulated separately. To saddle the medical profession with the blame for the mortality from operations done by the patient herself or the outlaws of the profession is manifestly unjust. A proper correction of the maternal mortality rate would show that while it is not the lowest in the world, it is less than the average of all countries. The lowest rate seems to be in the Scandinavian countries and because abnormal cases are extremely rare, women are better risks and a contracted pelvis is exceptional.

The general practitioner is amply qualified to handle about 90 per cent of all cases. Fair risks may be turned into good risks by efficient prenatal care. Poor risks are best turned over by the family physician to a specialist before the condition of the patient becomes perilous, whether the case is one of toxemia or contracted pelvis.

The New York Obstetrical Society disagrees with the New York Academy of Medicine in sending a report of destructive criticism to the lay press, instead of a pamphlet of constructive criticism to the profession stressing proper prenatal care, aseptic technique and the avoidance of meddlesome examination and instrumentation.—L.R.P.

MEDICAL SCHOOL CLINIC

MANAGEMENT OF CHILDREN EXPOSED TO SCARLET FEVER*

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With a Note on the Culture of the Streptococcus Hemolyticus

CECIL G. LEITCH, M.D.
Kansas City, Missouri

This discussion is prompted by the question which is asked of the physician not infrequently: what should be done for the member of the family who has just been exposed to scarlet fever?

I wish to recall briefly the recent attitude towards scarlet fever immunization. Eleven years ago the experimental work done by George F. Dick and his wife Gladys H. was made known to the profession. Many physicians enthusiastically accepted the methods they suggested. Some have received it with doubt. The public soon learned of the possibility of making children immune by simple injection of a toxin, comparable to the method which had proved successful against diphtheria. In Kansas City organizations urged that all children be immunized to scarlet fever as well as to diphtheria and smallpox.

As a measure for use in private practice and for routine school immunization it was soon found that there were some drawbacks to attempting this seemingly formidable procedure. A series of several injections at weekly intervals, the occurrence of considerable reaction with one or more of the doses, in some instances vomiting, sometimes a rash resembling scarlatina, made many parents fearful and unwilling to permit the injections. Most physicians after a little experience with unpleasant reactions from the series of three doses which were advised when the work started, were unwilling to use the method, preferring to wait until more experience had perfected or refined the technic. In recent years in Kansas City there has been no general attempt toward protecting children from this disease. But the accuracy of the Dicks' discoveries has now been confirmed by observers over the world. Each year for the past ten, in teaching the classes in this school, I have advocated immunization to scarlatina. Members of the senior classes have been tested for scarlet fever susceptibility. The results of the Dick test have always checked with the previous history of the individual regarding scarlet fever. Each year I have immunized a larger per cent of my private patients. Undoubtedly the methods will come into a more general use if the whole procedure can be simplified.

NATURE OF THE EXPOSURE

When you are told that your child has been exposed, you should try to find out definitely if the case is really scarlet fever. The typical red throats and definite rash are easy to diagnose. In some instances sore throat is the only symptom, with the exception of fever. These represent instances of scarlatina sine eruptione, or the rash may appear late. We had such a case of tonsillitis more than once in this hospital which was responsible for a spread of scarlatina. Not uncommonly there will be a light rash without obvious sore throat but with the initial vomiting. Such cases are often passed off as food or drug rashes. Recently a mother was much frightened by the school nurse who called at the home to see why the child had not come to school. To the nurse the rash suggested scarlatina, but it proved to be urticaria; and in a few days was followed by the lesions of chickenpox.

PRELIMINARY TESTING OF ALL CHILDREN

From my own experience I recommend that on a certain day each month, you should do Dick tests on your young patients whose susceptibility you do not know. You then have a record of the children so that if they are Dick-negative there need be no fear of acquiring scarlet fever infection. If a Dick skin test were done routinely the handling of the question of exposure would be much easier. As soon as the medical profession becomes more familiar with the reliability of the Dick test reaction, its usefulness will be appreciated. Persons shown to be immune by the Dick test do not need to be given active immunization or passive immunization with scarlet fever antitoxin. The routine injection of prophylactic antitoxin to all contacts would be unnecessary and unjustified.

SPONTANEOUS IMMUNITY

How does one get immunity naturally if he has not had scarlet fever? He can get immunity

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if he has had repeated sore throats which have been due to scarlet fever streptococci even if no rash has been present. I imagine that the average physician gets his immunity in this way or by repeated contacts. This immunity will hardly be as complete as that which comes from a typical attack of scarlet fever with a bright rash. Immunity may be due to an unrecognized attack, as mild cases are sometimes overlooked. Lasting immunity is maintained by antitoxin in the body which will continue to be produced through life.

Susceptibility depends upon the age of the individual and the previous exposures. In city children from crowded districts approximately fifteen per cent are positive. In country children sixty per cent are positive.

HOW IS SCARLET FEVER CARRIED?

Scarlet fever is transmitted by droplets of patient's breath which carry the streptococcus through the atmosphere. The immune person may therefrom become a carrier, who does not become infected because of the presence of antitoxin in the blood. In susceptible individuals the organisms which lodge in the throat, nose, possibly in the sinuses, grow, produce toxin and the typical symptoms of scarlet fever. Toxin alone injected into the body of a susceptible person does not produce infection but it causes fever, vomiting and a rash of brief duration.

When a child comes in contact with scarlet fever, isolation of the child from further exposure is one of the first efforts to make against contracting the disease. Quarantine is maintained to keep non-infected individuals away from the one infected, and until active immunization of the contact can be completed.

In the Dick's most recent communication[1] the interesting statement is made that not more than ten per cent of those who are contacts get the disease. In institutions and wherever contact lasts most of the 24 hours, 50 per cent of the individuals get the disease if the epidemic is prolonged. In such an epidemic most all susceptibles finally get it. In one instance I knew of a mother who had the nursing care of her child with scarlet fever and did not get the disease until the end of the fourth week. Aseptic nursing will usually prevent spread of the disease to other members in the household.

The desquamation stage (scaling) probably never transmits the disease through the scales alone. The skin of a scarlet case gives a negative Dick test by the 21st day, and the serum from the patient's blood at that time may safely be used for passive immunization or for treatment against scarlet fever.

After exposure, a Dick test should at the earliest opportunity be made, and read in 20 hours. If it be possible to make a culture from the nose and throat at the same time, the Dicks advise that this be done. However, the outcome of the Dick test can be awaited if the test was made within a few hours after exposure; if it prove negative the culture need not be made. If both test and culture, however, are found to be positive the individual is considered infected and may get the disease. The injection of serum (scarlatinal antitoxin) may then be done and can be expected to give transient protection according to the Dicks. However, I would refrain from sensitizing an individual unnecessarily to horse serum by giving antitoxin unless it is absolutely indicated. I know of one anaphylactic death from scarlet fever serum in a previously serum-sensitized child.

If the cultures are negative, while the Dick test is positive, active immunization with the Dick toxin solution of five doses should be begun.

After exposure there is always some anxiety until the incubation period is safely passed. The following percentages give an idea as to the time when the disease may be expected:

Three or four days	about 38% of cases
Two days	13%
Within 24 hours	5%
An incubation period of four days or less make up	56% of cases

The remainder or 44 per cent of the cases will have an incubation period varying up to seven days, rarely longer. You can, therefore, reasonably assure your patients that after one week the chance of getting the disease is small.

INTERPRETATION OF THE SKIN TEST REACTION

One gives an intradermal injection of one-tenth c.c. of the Dick test solution. It is well, as a matter of routine, to use the anterior surface of the left forearm.

Duration of reaction: This is transient, making it necessary to do the test one day and read it the following day within 20 to 24 hours after injecting the test solution. For instance, if the test is done in your office at 4 p. m., it is read the next day sometime between 12 noon and 4 p. m.

Size: The reaction is interpreted positive if it is as large as one cm. in any diameter. It may

be in some cases 5 cm. in diameter. The test area is not indurated nor elevated as in the Schick test.

Color: Susceptibility to scarlet fever is shown by a red color, even the faintest red, but an intense red means less immunity (more susceptibility) than the faint ones. Any shade of red is positive as far as color is concerned. No control test is necessary as pseudo-reactions do not occur.

The following table summarizes the time required for scarlet fever immunization:

1st day—Dick Test performed		
2nd day—Dick Test read		
2nd day—1st dose—	500	Skin Test Units
7th day—2nd dose—	2,000	" " "
12th day—3rd dose—	8,000	" " "
17th day—4th dose—	25,000	" " "
22nd day—5th dose—	80,000	" " "
29th to 36th day—	Dick Test repeated which if negative proves the development of immunity.	

General Reactions From Active Immunization Following the Individual Dose of Toxin Solution: If the patient is susceptible a reaction of a general nature is common. It comes on in a few hours, and has disappeared the next day. In office patients it is not uncommon to learn from the mother that the child vomited soon after reaching home, that fever occurred and malaise was present.

Reactions are less common since the doses are carefully graduated into five injections, the first and second doses extremely small. The last dose of 80,000 skin test units finds the child prepared and inured to its introduction and presence in the body so that reaction is rare.

The duration of artificial immunity from these injections of graded doses of toxin is not yet known, but the Dicks believe that it lasts as long as that following diphtheria toxoid injections.

The Dicks recently report that among 12,584 persons who gave positive skin tests in institutions where epidemics prevailed, active immunization with graduated doses of toxin was performed. These persons were followed up, and no case of scarlet fever developed. In 3,000 susceptible attendants, nurses and internes, who were made immune, then assigned to duty in a scarlet hospital, no one got the disease.

Trask and Blake[2] have just described the finding of a new strain of hemolytic streptococcic scarlatinal toxin in pleural exudate of pneumonia accompanying scarlet fever. This toxin was not neutralized by the usual antitoxin for scarlet fever and they believe that when antitoxin has failed to produce results in severe scarlatina the cause has been a heterologous type of toxin of scarlet fever. Dr. Wadsworth has, however, prepared a polyvalent antitoxin which neutralizes both this new unusual toxin and the standard Dick toxin. Heterogenicity (dissimilarity of elements), does occur in toxins in the blood of scarlet fever patients, and in the scarlatinal antitoxin found in convalescent serum of man; it is probable, therefore, that with a completely polyvalent serum, therapeutic results will be greatly improved, as polyvalency has been found necessary.

SUMMARY

The routine testing of all children in one's practice, before exposure has occurred, will at once identify immunes and susceptibles. Immunization of the latter group will make it a matter of no concern when contact with scarlet fever occurs.

The supposed case of scarlet fever to which the child has been exposed should be investigated so that the correct diagnosis may be known.

Further contact with a true case should be prevented by removing the child from its environment. Aseptic nursing of scarlet fever should always be carried out.

Immediately after known exposure a Dick test should be done, and the reaction read within 20 to 24 hours. A negative reaction calls for no concern, though contacts could well be cultured for a possible carrier state.

If there are both a positive reaction and a positive culture the individual is infected and may soon come down with the disease. A dose of anti-scarlatinal serum may then be advisable, and should prevent the disease if not given too late. Serum sickness is the objection to the use of serum.

A positive reaction and a negative culture indicates the advisability of complete removal from the sick room or infectious environment, and the prompt administration of the series of toxin injections for active immunization.

I believe that the injection of this toxin specifically has the power to stimulate the development of antitoxin in the body. The method is rapidly increasing in its use after several years of trial and refinement of technic.

Private practice lends itself much better to

the performance of scarlet fever immunization than do public health attempts.

In conclusion I would emphasize that there is much that can be done by the physician, if there has been exposure of a child to a case of scarlet fever.

REMARKS BY DR. LEITCH

In the handling of cases of scarlet fever, the laboratory and its facilities may play an important part. This aid may be either in the diagnosis or in the management of control, especially by quarantine.

As concerns diagnosis, assistance may be given in the culturing of suspicious throats with the demonstration of hemolytic streptococci in nose and throat cultures on blood agar plates. The painstaking investigation of numerous workers concerning this disease has shown a hemolytic streptococcus as the etiological factor, the infection being located in the naso-pharynx. The toxins resulting from this localized infection produce an exanthem. Acute sore throats associated with hemolytic streptococci demonstrated on blood agar media should presumptively be considered scarlet fever.

Plates used in these cultures are prepared by adding 5 c.c. of defibrinated blood (sterile) to 100 c.c. of melted sterile agar at about 50 degrees centigrade. In pouring the plates, one uses about 12 c.c. of media per plate. These plates can be kept for considerable time in an ice box. The hemolytic character of the growth is indicated by hemolysis of the blood in the media along the line of innoculation of the media, the innoculation having been made by the continuous streak method on the surface of the media.

In the management of contacts, cultures of the nose and throat can be used in conjunction with the application of the Dick test. Contacts of a diagnosed case are subjected to the Dick test and cultures are made on blood agar plates of the nose and throat. This procedure, of course, predicates the use of antitoxin in the rapid passive immunization of susceptible contacts based on the positive reaction to the Dick test and the demonstrable presence of hemolytic streptococci in the cultures from the naso-pharynx.

By the immediate culture of the nose and throat and the application of the skin test for susceptibility, and the use of antitoxin prophylactically in infected susceptibles it is possible to bring an epidemic of scarlet fever under control within seventy-two hours. An infected susceptible is considered one in whom the hemolytic streptococci are demonstrated in cultures from the nose and throat by the use of blood agar plates.

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2. Trask and Blake, Heterologous Scarlet Fever, Trans. Section on Pediatrics, A.M.A. p. 94, 1933.

THE LABORATORY

THE CONVALESCENT DIPHTHERIA CARRIER

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The striking response to the use of diphtheria antitoxin usually obtained in cases of diphtheria naturally leads to the assumption that since the antitoxin has caused the disappearance of the membrane and the subsidence of the clinical manifestations of the infection, it has also eliminated the diphtheria bacillus from the patient's nose and throat. Unfortunately, this is not true. Diphtheria antitoxin merely neutralizes the toxin produced by the diphtheria bacillus, it has no bactericidal effect on the organism and this is demonstrated by the fact that the diphtheria bacillus grows luxuriantly in diphtheria antitoxin.

Other factors or substances, than diphtheria antitoxin, are needed to eliminate the diphtheria bacillus from the site of infection after the symptoms of the disease have subsided. These substances are apparently a product of the body of the patient and since individuals vary widely in their ability to produce such substances some convalescents remain carriers of the organism for considerable lengths of time.

The records of one large city combined with tabulations from the writer's experience, representing more than two thousand cases of diphtheria, show the diphtheria bacillus has disappeared from the throats of the majority of convalescents by the end of the third week after the onset of the disease but it continues to persist in a small per cent of cases for considerably greater lengths of time. These results are shown in the following table and the normal expectancy for release from quarantine is shown graphically in the accompanying chart.

The Release of Diphtheria Quarantine

Week after onset	Per cent of cases released
1	3
2	36
3	71
4	88
5	94
6	96
7	98

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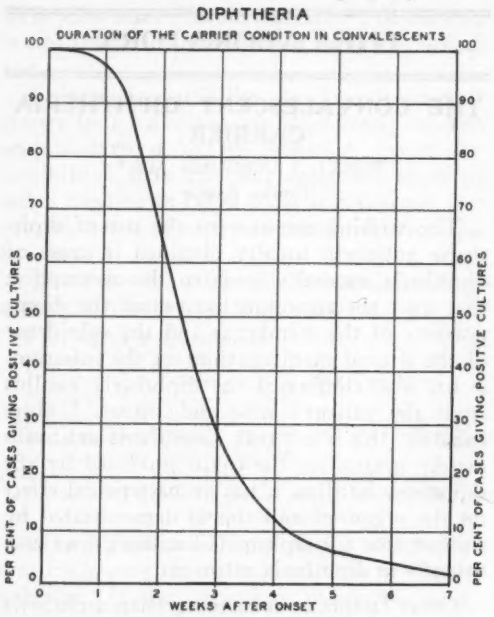

The physician may expect an occasional patient will harbor the diphtheria bacillus for a considerable length of time. The two per cent of patients who will still be carrying the organism at the end of the seventh week after the onset of the disease represent the usual incidence of carriers to be found in a normal population when diphtheria is not prevalent. These chronic carriers usually have some pathology in the upper respiratory tract which accounts for the persistent carrier condition.

Numerous methods of local treatment for clearing the throat of diphtheria bacilli have been reported but their use in large groups of cases indicates they have little or no value and no one method can be recommended as at all superior to any other. Occasionally such treatment will give the patient's system just enough assistance to enable it to rid itself of the organism but the results obtained are never consistent. The deciding factor in the elimination of the carrier condition in diphtheria convalescents seems to be that combination of obscure factors commonly termed "general resistance" and steps should be taken to improve the patient's general physical condition as soon as possible.

A virulence test may be made in chronic carrier conditions to determine whether or not the strain of the diphtheria bacillus still persisting in the patient's throat is capable of causing clinical cases of diphtheria. The virulence test has the disadvantages of being expensive and time consuming since it employs guinea pigs and diphtheria antitoxin and requires from three to five days for the completion of the procedure. Nearly ninety per cent of diphtheria convalescents will have been released from quarantine at the end of the fourth week after onset by means of two negative nose and throat cultures. A virulence test is not indicated, therefore, until at least twenty-eight days after the onset of the disease since when the test is started earlier, two negative cultures are frequently obtained before the test is completed or the organism is found to be virulent. In either case the time and money involved in the test are wasted so far as the release of the patient is concerned.

PRESENT ENDOCRINE DIAGNOSIS AND THERAPY: CRITICAL ANALYSIS BASED ON HORMONE STUDIES IN FEMALE

Robert T. Frank, Morris A. Goldberger and Frank Spielman, New York (J.A.M.A. Aug. 11, 1934), state that quantitative hormone studies show the humoral status before and at puberty, during maturity and after the menopause. Functional genital disturbances are of two types—underfunction and overfunction. Both types are primarily due to disturbances of the anterior pituitary cycle, the ovarian cycle being secondarily affected. Emphasis is placed on the accurate "size up" of the individual studied and on other laboratory aids which help in the recognition and evaluation of congenital and acquired endocrine stigmas. Examples of spontaneous recovery without treatment are featured, as, in the authors' opinion, they account for the majority of successes currently ascribed to endocrine therapy in functional genital disturbances of the female.

(Continued from Page 430)

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MEDICAL LITERATURE

Edited by
WILLIAM C. MENNINGER, M.D.

DERMATOLOGIC DIAGNOSIS

The author has collected the incidence of various dermatological diseases in 1,112,050 cases. The six ranking diagnoses, include eczema. impetigo, scabies, psoriasis, acne, and urticaria. The author calls attention to the fact that the percentage of each of these differs slightly from previous statistical studies of a similar nature, despite the fact that previous studies were made in the same clinics among the same class of patients, of like economic status, and living under the same environment. He makes no conclusion from this fact.

Aohrweide, A. W., Recent Changes in Dermatologic Diagnosis. Archives of Dermatology and Syphilology. 30:260-263. (August) 1934.

CEREBRAL BLOOD FLOW IN EPILEPSY

By a series of ingenious experiments, these writers from the department of neuropathology of Harvard, have shown that in ten patients there was no evidence of a significant reduction in blood flow immediately preceding the onset of convulsive seizures. During severe seizures there was a great increase in flow but the changes were the result rather than the cause of the seizure. This is very conclusive evidence against the theory of a widespread anemia of the brain as the immediate cause of epileptic seizures.

Gibbs, F. A., Lennox, W. G. and Gibbs, E. L., Cerebral Blood Flow Preceding and Accompanying Epileptic Seizures in Man. Archives of Neurology and Psychiatry 32:257-272 (August) 1934.

ACETARSONE IN CONGENITAL SYPHILIS

The writer who reports from the Department of Pediatrics of the Jefferson Medical College, recommends acetarsone as well tolerated by infants and children in the treatment of congenital syphilis. It is a white crystalline powder, easily soluble in water and given by mouth. He gives it 0.005 grams daily for each kilogram of body weight for the first week; for the second week 0.010 grams; for the third week 0.015 grams; and for the following six weeks 0.020 grams. It is given in milk one-half hour before feeding; when the quantity is small once daily, but with larger doses given two or three times daily. He has found it extremely effective for young infants both rendering them symptom free and causing the serologic reactions to become negative. He believes acetarsone to be superior to bismuth in bringing about an earlier reversal of the serum reaction.

Coppolino, J. F., Acetarsone in the Treatment of Congenital Syphilis. American Journal of Diseases of Children, 48:272-280. (August) 1934.

PROLONGED USE OF BARBITURATE

Hoge reports a case of a woman who for a period of seven years took from three to four amytal tablets every day. He saw her at the end of this time and upon examination she showed only a few subjective nervous symptoms, a moderate tachycardia and a slight anemia. He has commented on the point that surprising little harm had been associated with this very prolonged over dosage of a barbiturate. He does not give any follow-up and fails to point out specifically that the tachycardia was one of the original motives for taking the drug.

Hoge, S. F. A Case of Prolonged Use of a Barbiturate. American Medicine. 40:235-238. (July) 1934.

PEPSIN IN THE PREVENTION OF ABDOMINAL ADHESIONS

These writers have experimented with various preparations in the prevention of adhesions. They find thiosinamine ineffective; a proprietary preparation of bovine amniotic fluid gave favorable results. Pepsin extracted with hydrochloric acid was not promising as a preventive but in glycerin and water extract, it was effective in prevention or reduction of the reformation of adhesions in 62 per cent of cases. They found that it was most effective as a prophylactic in primary operations, and in these cases 86.4 per cent it was successful.

Yardumian, K. and Cooper, D. H., Pepsin in the Prevention of Abdominal Adhesions. Archives of Surgery. 29:264-276. (August) 1934.

BILE PERITONITIS

The author bases his studies on eight cases with perforated gallbladder. His conclusions are that diffuse bile peritonitis has rarely, if ever, been found the cause of death in man. The extravasated sterile bile is rapidly encysted and thereby becomes relatively innoculate. If the bile is not encysted it provokes a response which soon invites surgical intervention. Death may occur from infected bile but it is then due to the pyogenic rather than the chemical peritonitis.

Mentzer, S. H., Bile Peritonitis. Archives of Surgery 29:227-241 (August) 1934.

RHEUMATIC DISEASES OF THE SPINE

Dr. Miller presents in a very clear style the two types of rheumatic diseases of the spine, namely the rheumatoid arthritis, which is infective in origin and the osteo-arthrosis, a degenerative disease. Both of these occur in the extremities but may also affect the spine. The presentation particularly stresses the etiology, the signs and symptoms and diagnosis. In both cases he says that the prognosis is poor and that the best treatment he knows is unsatisfactory except in the acute cases where the patient may be made more comfortable by rest in bed and analgesics.

Miller, J. L., Chronic Rheumatic Diseases of the Spine. The Archives of Internal Medicine. 54:161-169. (August) 1934.

RECURRENCES IN PNEUMOCOCCUS PNEUMONIA

These writers from the Thorndike Memorial Laboratory in Boston, report a study of 57 cases having recurrent attacks of pneumonia, associated in each instance with serologically identified pneumococci. Their analysis failed to indicate any marked change in the local or type-specific susceptibility and that the distribution of the types of pneumococci and the sites of the pulmonary lesion were very similar to that observed in pneumococcus pneumonia. A large number of the cases had more extensive and "atypical" lesions during the recurrent attack. They found that early recurrences are more frequent among the serum-treated cases.

Finland, M., and Winkler, A. W., Recurrences in Pneumococcus Pneumonia. American Journal of Medical Sciences 188:309-321. (September) 1934.

THE PROGNOSTIC VALUE OF SPINAL FLUID IN SYPHILIS

This work from the Peter Bent Brigham Hospital in Boston is a survey of nineteen cases who were followed from five to nineteen years. The outcome in all of these cases was favorable, although in the group there were two cases with positive spinal fluid in the first year of the disease with no abnormalities five years later. In four additional cases the spinal fluid was strongly positive after the early stage of the disease and examination from ten to thirteen years later showed no evidence of abnormalities. In conclusion then, the outcome of the entire group was the same regardless of the early spinal fluid findings. The author does not disregard the fact, however, that central nervous system changes might still take place in the future.

Schnitker, M. A., The Value of Early Lumbar Puncture in the Prognosis of Central Nervous System Syphilis. American Journal of Syphilis, 18:360-372. (July) 1934.

THE DIABETIC CHILD

Dr. John of the Cleveland Clinic surveys the various etiological factors in the causation of diabetes in children. The most important he thinks is hereditary, in which there was a 30.8 per cent incident in the cases reported in the literature and 18.7 per cent of his own 214 cases. This hereditary influence is much higher in Jewish children than in Gentile children. Obesity is not a major etiological problem, arteriosclerosis is not a causative factor and hyperthyroidism plays an insignificant role. He believes syphilis can be disregarded as causative factor.

John, H. J., The Diabetic Child, Etiologic Factors. Annals of Internal Medicine, 8:198-213. (August) 1934.

INDICATIONS OF PHYSICAL THERAPY

The author, a practicing physician, summarizes the effect of heat, exercise, massage and the ultra-violet ray. He is impressed by the fact that many of these forms of physical therapy are used chiefly upon an empirical basis. The most good that comes from any form of physical therapy, in his opinion, is that it serves as a defense mechanism of the tissue in response to external stimuli and consequently the most valuable are those which stimulate the increased flow of blood through a part treated.

Sprunt, T. P., Certain Bases of Physical Therapy. The Annals of Internal Medicine. 8:192-197. (August) 1934.

VIOSTEROL FOR RICKETS IN PREMATURE INFANTS

These two authors writing from the department of diseases of children, in the College of Physicians and Surgeons in Columbia report that even in the presence of severe clinical and roentgenological rickets there is no variation in the serum calcium or inorganic phosphorous from birth to five months of age. They show that Viosterol 250 D in a maximal dosage of 20 drops a day was inadequate for the complete protection of the premature infant.

Davidson, L. T., and Merritt, K. K., Viosterol in the Prophylaxis of Rickets in Premature Infants. The American Journal of Diseases of Children. 48:281-308. (August) 1934.

William Volker Clinic

The Diagnostic Department of Research Hospital was established in November, 1924. In a reorganization in 1933 the medical staff assumed financial and operating control and changed the name of the organization to the William Volker Clinic. Patients are received for diagnosis or diagnosis and treatment. On completion of examination of patients referred for diagnosis, reports which includes the patient's history, physical examination, laboratory and *x*-ray reports, the findings of various specialists and the final diagnosis with recommendations for treatment, are sent to the patient's physician—in no instance will reports be given to patients. The fee includes all necessary tests and examination.

The follwing Departments are represented: Medicine, Surgery, Orthopedics, Neurology, Oto-Rhino-Laryngology, Ophthalmology, Urology, Proctology, Dermatology, Gynecology, Pediatrics, Obstetrics, Radiology, Pathology and Electrocardiography.

For further information addresss William Volker Clinic, 23rd and Holmes Streets, Kansas City, Missouri

NEW BOOKS

BOOKS RECEIVED

Physiology in Health and Disease, by Carl J. Wiggers, M.D., professor in physiology, School of Medicine, Western Reserve University. A book of 1184 pages and 182 illustrations with a statement by the publisher that it has been written for medical practitioners, as well as students, and that its objective is a complete understanding of functional disturbances of patients leading to diagnosis in the physiological manner without sacrificing biophysical, biochemical, and mathematical elements of physiology. That to this end the author stresses application of pure science and physiology, inculcates the general principles of physiology, outlines and surveys the functions of the various tissues, organs and systems, and correlates physiological alterations produced experimentally with aberrant manifestations illustrated in patients. Published by Lea and Febriger, Philadelphia, at $9.00 per copy.

Applied Anatomy by Gwilym M. Davis, M.D., late profesor, orthopedic surgery, and associate professor, applied anatomy, University of Pennsylvania. A ninth edition, reset, reillustrated, and completely revised by George P. Mueller, M.D., professor, clinical surgery, University of Pennsylvania, assisted by Bernard J. Alpers, M.D., Stirling W. Moorhead, M.D., Robert A. Kimbrough, Jr., M.D., I. S. Ravin, M.D., and S. Dana Weeder, M.D., also of University of Pennsylvania. The preface states that the work intends to teach surgical principles through the medium of anatomical relations, and as the book is not an operative surgery, descriptions are sketched and anatomical relations are conjoined. That the original text through years of insertions had become uneven for reading, and also needed general revision and addition. Consists of 717 pages with 674 illustrations. and is published by J. B. Lippincott, Philadelphia.

Cataract, Its Etiology and Treatment, by Clyde A. Clapp, M.D., associate professor, ophthalmology, Johns Hopkins University, and professor, ophthalmology, University of Maryland. The review quoted below from W. H. Wilmer, M.D., Johns Hopkins University, is furnished by the publisher: "The remedies suggested for the prevention or cure of cataract are many; and the different forms of instruments and operative procedures recommended are bewildering in their variety and complexity. Therefore, there is a distinct need for a clear, concise, yet comprehensive monograph upon all of the different aspects of the crystalline lens in health and in disease. This book contains 25 chapters which cover very succinctly a wide range of valuable facts, from the development of the human crystalline lens to the treatment of its affections. Dr. Clapp has succeeded admirably in the very difficult task of placing between these covers a vast amount of interesting and useful information. It should be welcomed by students and by practitioners of ophthalmology." Consists of 300 pages with 92 illustrations, and is published by Lea and Febiger, Philadelphia, at $4.00 per copy.

Synopsis of Genitourinary Diseases, by Austin I. Dobson, M.D., professor, genitourinary surgery, Medical College of Virginia. The author designates this as a synopsis assembling all essential facts of urology for medical students, and as a handy reference for practitioners of medicine. That chapter 1 is a summary of the prominent signs and symptoms of urogenital disease. Chapter 2 covers the instruments needed and used in general practice. Chapter 3 gives a brief description of the anatomy of genitourinary organs. Chapter 4 treats of anamolies, and remaining chapters are arranged largely according to the etiology of the disease. Consists of 275 pages with 111 illustrations, and is published by C. V. Mosby Company, St. Louis, at $3.00 per copy.

The Laboratory Notebook Method in Teaching Physical Diagnosis and Clinical History Reading, by Logan Clendenning, M.D., professor, clinical medicine, University of Kansas. Explanatory remarks by the author show this to be an attempt to carry over into clinical teaching a plan long used successfully in the fundamental sciences. An outline notebook, of which this work is an illustration, is therefore suggested for history taking and physical examinations. Published by C. V. Mosby, St. Louis, at 50 cents per copy.

Nature's Way, by Victor C. Pedersen, M.D., a treatise on the fertile and sterile periods of marriage, consisting of 81 pages, published by G. P. Putnam and Sons, New York, at $1.00 per copy.

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NEWS NOTES

EXECUTIVE SECRETARY COMMITTEE REPORT

The September number of the state JOURNAL contained a report of the activities of the executive secretary committee up to that date. Considerable progress has been made since that time which we believe of sufficient interest to call for a second report.

Our executive secretary, Clarence Munns, is now established in new office space in the Stormont Building in Topeka, thus setting up a central office for our state society in the legislative center of the state. Most of the records of the state Society will naturally be centralized in this office and various of the state Society records are being transferred to this office. Mr. Munns will have the help of two secretaries in this office.

The JOURNAL arrangement provides for management of the JOURNAL by an editorial board consisting of Dr. W. M. Mills, editor and chairman; Dr. L. R. Pyle, Dr. R. B. Stewart and Dr. F. C. Taggart. This board is to be assisted by a group of associate editors chosen more or less geographically throughout the state. The names of the associate editors are published in this number of the JOURNAL.

Like other Society activities, the JOURNAL will flourish and progress exactly in proportion to the amount of interest and help given by every member of our state Society.

The executive secretary and his office force are now in position to give able help in all committee work of our state Society. The executive secretary committee urges every committee member and every committee chairman to call on Mr. Munns for his presence and technical assistance in all committee meetings and all committee work.

To those especially interested in the finances of the Society, the executive secretary committee would like to state that these new arrangements are being carried on at a very reasonable expense to the Society and well within the limit of the Society income.

HENRY N. TIHEN, M.D., Chairman
Executive Secretary Committee.

CORRESPONDENCE

The following letter has been received from Dr. F. L. Rector, author of the Cancer Survey of Kansas, in reply to Dr. Arthur Hertzler's comment concerning same mentioned in the October issue:

"On page 391, October, 1934, issue of the JOURNAL of the Kansas Medical Society, is a communication from Dr. Arthur Hertzler, Halstead, Kansas, objecting to the statement in our report on the cancer survey of Kansas that there was no deep therapy equipment in the Halstead clinic.

"This report comprised the information obtained from an extensive field survey of hospital facilities that was made in July and August, 1933. The Halstead clinic was visited on August 1, 1933, when the information as printed was furnished by Dr. Hertzler himself. The report was submitted to the Kansas Medical Society in February, 1934, and considered at the Wichita meeting in May and ordered printed.

"Following the appearance of the report in your JOURNAL, Dr. Hertzler wrote me saying that 'your inspection must have been made a long time ago.' Shortly after receipt of his letter another letter was received from the sales department of the General Electric *x*-Ray Corporation in Chicago, saying that their attention had been called by Dr. Hertzler to the statement in my report and that

> 'We are very happy to inform you that under date of July 9, 1934, we shipped a complete KX-3 transformer and shock proof deep therapy unit to this institution and completed the installation a couple of weeks later.'

"It is only necessary to call attention to the fact that the deep therapy equipment was installed in the Halstead clinic one year after the institution was visited to remove any doubt as to the accuracy of our report. Delay in making the report public was in no way the fault of our Society as its publication rested entirely with the Kansas Medical Society.

"It would be appreciated if you would make available to your readers the facts in this situation as here presented."

The October and November issues of the JOURNAL, therefore apparently cover both sides of the question, and should close the incident.

TWENTY-FIVE YEARS AGO

Excerpts from Journal, November, 1909

"October 13 and 14 examinations were held for certificates to practice medicine. There were twenty-three candidates, sixteen of whom passed."

"The Kansas epidemic of anterior poliomyelitis has subsided; there have been about sixty-five cases reported to the State Board of Health."

The editor's note on "Medical Men as Makers of History" cites Dr. Frederick A. Cook's recent discovery of the North Pole as another achievement adding new laurels to the profession. Medical men have always been prominent in fields other than their own. Josiah G. Holland is the editor of Scribner's Magazine. S. Weir Mitchell's delightful book, "Hugh Wynn," is seldom thought of as a product of a famous neurologist. The professor of anatomy at Harvard, Oliver Wendall Holmes, has made himself more famous with his essays than his excellent medical work.

"The officers of the state Society at this time are: President, Dr. O. J. Furst; first vice president, Dr. F. F. Foncannon; second vice president, Dr. J. D. Walthall; third vice president, Dr. J. P. Kaster; secretary, Dr. Chas. S. Huffman; treasurer, Dr. L. H. Munn; librarian, Dr. S. G. Stewart; editor of the state JOURNAL, Dr. James W. May."

"REGISTER YOUR BABY" CAMPAIGN

A campaign sponsored by the Kansas State Board of Health, Federal Bureau of the Census, and Kansas Emergency Relief Committee is to be commenced in the near future whereby cards will be mailed to every family in Kansas requesting that they complete enclosed birth information for return to the vital statistics department of the state board of health. Purposes intended are to increase registration for the past year, to insure correctness of present records, and to emphasize legal, social and economic importance of birth registration.

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Neurologist and Addictologist

HERMON S. MAJOR, M.D.
Neuro-Psychiatrist

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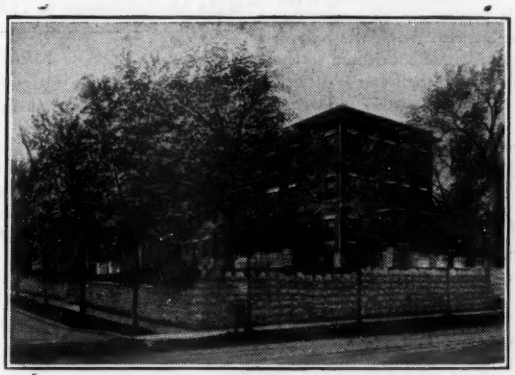

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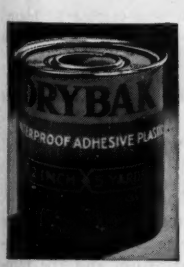

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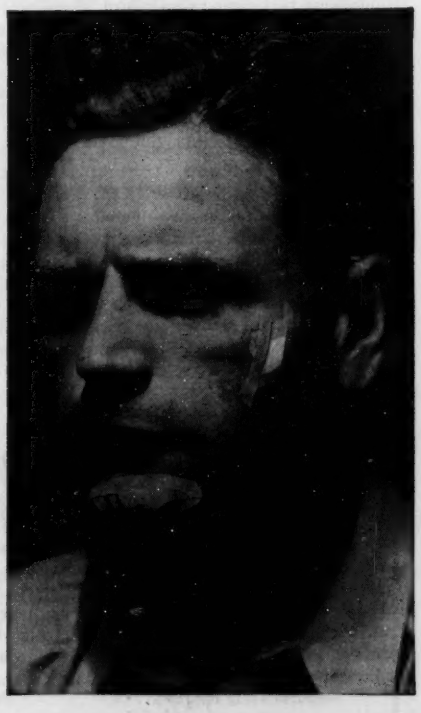

NEW OFFICE

The new office of the Society was opened on October 18, and consists of 300 square feet of floor space on the second floor of the Stormont Building, a modern fireproof building, centralling located. Arrangements were made for an inner and outer office, and a reasonable amount of furniture was purchased to supplement that utilized in the former JOURNAL office. A vault is available, and ample filing space is present for all correspondence, records, and files of the Society. An addressograph and multigraph, previously owned, also contribute to the equipment. Service in connection with the latter is offered to all county societies, officers, or committees who find multigraphed lists and bulletins a problem. Personnel is composed of Clarence Munns, Miss Ruth Carlson and Miss Isabel Wright. Mailing address is Kansas Medical Society, Stormont Building, Topeka.

MORBIDITY REPORT

The following report of the state department of health shows the number of communicable disease cases reported in the state during the month ending October 20:

177 cases of scarlet fever, 59 cases of diphtheria, 24 cases of typhoid fever, 9 cases of poliomyelitis, 7 cases of encephalitis, 2 cases of smallpox, 67 cases of whooping cough, 85 cases of measles, 1 case of meningitis, 58 cases of tuberculosis, 67 cases of gonorrhea, 98 cases of syphilis, 20 cases of German measles, 169 cases of chickenpox, 64 cases of mumps, 71 cases of pneumonia, 1 case of rabies, 2 cases of tularemia, and 1 case of amebic dysentery.

TUBERCULOSIS NOTES

Tuberculin Testing in Schools

Dr. Ralph I. Canuteson, director of Health Service of Kansas University, gave the tuberculin skin test to 1330 freshmen students in September, 1934. The positive reactions were very close to one-third of the total number tested. The Health Service took 450 *x*-ray films which are now in the process of careful study. Dr. Canuteson reports that studies thus far made indicate that eight per cent of all positive reactors will need further examination.

Dr. C. F. Taylor, superintendent of Norton Sanatorium, made some records of great value as to the reaction of school children to the tuberculin skin test, by work done in the schools of Norton, Kansas, early in 1934, using the Mantoux test on 266 children of grade school age. He found that 74 per cent were negative, 19 per cent definitely positive and seven per cent fair reactions that could not be positively interpreted. At the same time, he tested 154 high school students, showing 64 per cent negative, 18 per cent positive and 18 per cent with indefinite reactions. Those tested included a total of 420 children. One active case of tuberculosis was discovered.

DEATH NOTICES

Dr. James S. Hibbard died at his home in Wichita on October 17. He was 61 years of age, had lived in Kansas for 15 years, and was a graduate of Kansas City Medical College in 1900.

Dr. James Napoleon Ketchersid died at his home in Hope on September 30. He was 84 years of age, had lived in Kansas since 1878, and was a graduate of New York Medical College in 1873. Dr. Ketchersid was an organizer and charter member of the Dickinson County Medical Society and the Golden Belt Medical Society.

Dr. Henry Shelby McKenzie died at Kansas City on September 24. He was 50 years of age, had lived in Kansas since 1911, and was a graduate of Southwest School of Medicine in 1909, and Eclectic Medical University in 1911.

Dr. Emily E. Spencer died at Holton on September 8. He was 88 years of age, and was a graduate from Hahnemann Medical College in 1885.

MEMBERS

Dr. C. V. Black, Sedgwick county physician for the past two years, located in Pratt on October 16, and will assist Dr. W. F. Bernstorf.

Drs. O. E. Stevenson, Oswego; W. H. Rea, Arkansas City, and J. R. Pritchard, Fort Scott, attended a meeting of physicians and surgeons of the St. Louis & San Francisco Railway in St. Louis, Missouri, on October 8.

Dr. James E. Wallen, Ottawa, was the principal speaker at a meeting of the Ottawa Parent-Teacher Association, and discussed a prospective milk ordinance of that city.

Dr. Willard Holt, formerly of Wichita, has removed to Dodge City where he will practice with Dr. C. H. Briggs.

Drs. Karl A. Menninger, Topeka, and Leo Stone, Topeka, attended the meeting of the Central Neuro-Psychiatric Association, Cincinnati, Ohio, on October 11-13.

Dr. Clifford Van Pelt, Paola, has been appointed county health officer of Miami county.

Dr. Leo O. Smith, graduate of Creighton University School of Medicine, Omaha, Nebraska, has opened an office in Topeka.

The following are reported to have attended the annual meeting of the American College of Surgeons, Boston, Massachusetts, on October 15-19: Drs. Howard L. Snyder and Howard E. Snyder, Winfield; John A. Dillon, Larned; R. G. Klein and C. E. McCarty, Dodge City; H. M. Glover, Newton; J. G. Hughbanks, Independence; and Frank C. Boggs, Topeka.

Dr. Ralph M. Fellows, Topeka, attended the Oklahoma City Clinical Society Fall Conference, Oklahoma City, Oklahoma, on October 29-November 1.

Dr. L. E. Maker, who has practiced in Hoxie, will in the future be located at Hudson, Colorado.

Dr. Robert P. Knight, Topeka, was elected to membership in the Shawnee County Medical Society on October 1.

A conference and dinner was held at the Menninger Sanitarium on October 23 with an attendance of approximately fifty guests from Kansas, Nebraska, Missouri and Oklahoma. Drs. Wm. M. Ketcham, Kansas City, Missouri, and Leo Stone, Topeka, appeared on the program.

Dr. Seth L. Cox who did tuberculosis work with the State Tuberculosis Association for many years, and subsequently assisted the Norton Sanatorium and the Henrietta Brown Tuberculosis Research, is now medical director of the Washington Tuberculosis Association, Seattle, Washington.

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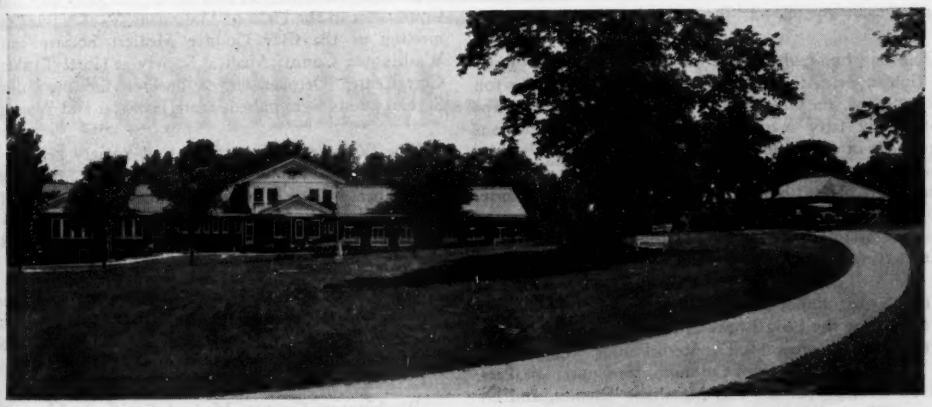

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The state department of health has recently added a Division of Tuberculosis to its organization, and Dr. Clifton Hall, formerly with the Norton Sanatorium and Henrietta Brown Tuberculosis Research, has been named as director. Inquiries may be addressed to him at the State Capitol building.

Dr. Porter Brown, Salina, has an article, "Dial—Urethan for Obstetrical Analgesia," in the October issue of Surgery, Gynecology and Obstetrics.

Drs. George Stafford, D. A. Anderson and Wm. Armstrong were admitted to membership in the Saline County Medical Society on September 21.

COUNTY SOCIETIES

Dr. Walter L. Bierring, president of the American Medical Association, will be the guest speaker at the annual meeting of the Shawnee County Medical Society on December 3. The meeting will be held at Hotel Jayhawk, Topeka, and will be preceded by a dinner for the members and their wives. All members of the Kansas Medical Society are invited to attend.

The Sedgwick County Medical Society held the following recent meetings at the Allis Hotel, Wichita: On October 5, Dr. H. W. Woodruff, Joliet, Illinois, spoke on "Eye Injuries and the General Practitioner"; on October 9, Dr. Henry P. Vaughn, public health officer, Detroit, Michigan, lectured on "The Family Physician and Preventive Medicine", and also Dr. Hugh Dwyer, Kansas City, Missouri, discussed "Medical Economics and Immunization"; and on October 16, Dr. Wilfred Cox, Wichita, gave a paper on "Dermoid Cysts of the Ovary."

The one hundred and eightieth quarterly meeting of the Golden Belt Medical Society was held at the Clayton Hotel, Salina, on October 11 with an attendance of approximately fifty members. Two clinical presentations were made in connection with papers by Dr. J. W. Neptune, Dr. Harold Neptune and Dr. E. M. Sutton. Other papers were offered by Dr. E. G. Padfield and Dr. Porter Brown. Following the scientific meeting a dinner and business meeting was held. Selection of Abilene as the next meeting place was approved.

Two recent dinner meetings of the Ford County Medical Society at the Lora Locke Hotel, Dodge City, are reported. On September 14, Dr. Vern Pauley, Wichita, and Dr. J. S. Norman, Pueblo, Colorado, were guest speakers; and on October 12, Dr. Hal Marshall, Wichita, and Dr. Howard Clark, Wichita, appeared on the program. Members and guests totaling forty and thirty-eight respectively attended, and both meetings were in connection with the regular monthly orthopedic clinic of this society.

The Butler-Greenwood County Medical Society met in Eureka on October 12 at the Eureka Country Club. The program consisted of golf in the afternoon, dinner, and a scientific session in the evening. Papers and clinics were presented by Dr. C. T. Hinshaw, Wichita, and Drs. Manahan, Wm. R. Jones, R. W. Moore, Bertram Johnson and C. D. Baird, all of Eureka. Guests from Iola, Augusta, Douglas, Rosalia, Leon, Wichita, Emporia and El Dorado were present.

Twenty-one members and guests attended a dinner meeting of the Johnson County Medical Society, Hotel Olathe, Olathe, on September 17. Dr. Ralph H. Major, University of Kansas, presented discussion and motion pictures of his recent year spent in Europe. Bell Memorial Hospital was selected as the next meeting place.

Dr. Frank Dickson, Kansas City, Missouri, at the invitation of Mitchell County Medical Society, the Rotary Club and the Probate Judge, assisted in a crippled children's clinic held at Community Hospital, Beloit, on October 9. Thirty-three children were examined. In the evening a public meeting was held at the high school auditorium, and Dr. Dickson, Mr. J. L. Chandler, Wichita, and Mr. Earle Evans, Wichita, discussed the Kansas Crippled Children Law.

The first fall meeting of the Wilson County Medical Society was held at the Brown Hotel, Neodesha, on October 16. A dinner preceded a round table discussion of the Southwest Clinical Society meeting, Kansas City, Missouri, and business meeting. The woman's auxiliary met at the same time, and each member of the auxiliary received a box of chocolates from Mr. Walter J. Bangs, Abbot Drug Company salesman. Next meeting of the society will be held at Fredonia in November.

The Leavenworth County Medical Society met at Cushing Memorial Hospital, Leavenworth, on October 8, with 30 members and guests present. Dr. Thomas G. Orr, University of Kansas, was the guest speaker. The November meeting is to be at St. John's Hospital, Leavenworth.

Dr. E. H. Skinner lectured on "Preventable and Curable Conditions in the Field of Malignancy", at a joint dinner meeting of the Clay County Medical Society and the Washington County Medical Society at Hotel Tankersley, Clay Center, October 10. A business meeting followed. Several guests were present from Hanover and Wamego.

The Wyandotte County Medical Society held its first fall meeting at the Wyandotte County Court House on September 4 with a program consisting of Drs. H. R. Wahl and R. W. Kerr, University of Kansas, and Dr. C. F. Taylor, Norton. A golf tournament during the month of September was announced.

Dr. C. A. Lilly, University of Michigan, discussed research of his department upon the subject of vitamins at a special meeting of the Atchison County Medical Society at Atchison on October 15.

Washington County Medical Society reports an informal meeting and dinner at the Washington Hotel, Washington, on September 25.

The Edwards County Medical Society and the Ford County Medical Society plan a joint meeting in Kinsley during November, with Dr. Paul A. O'Leary, Rochester, Minnesota, as guest speaker.

A program consisting of lecture and lantern slides on "The Problem of Diabetes," by Dr. Walter H. Nadler, Northwestern University School of Medicine, was presented to the Shawnee County Medical Society at the Jayhawk Hotel, Topeka, on October 1.

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Announcement of new officers of the Dickinson County Medical Society is as follows: president, Dr. T. R. Conklin, Abilene; secretary, Dr. S. M. Chaffee, Talmadge; board of censors, Dr. J. W. Dieter, Abilene; Dr. H. R. Turner, Hope, and Dr. E. J. Reichley, Herington.

The Saline County Medical Society met on September 21, at Salina. Committee reports in connection with the annual session at Salina were presented and discussed. A plan presented by Dr. W. R. Dillingham was approved whereby Saline County Medical Society will maintain a speakers bureau to other county societies for the purpose of advancing interest in the annual session. Subsequently, Dr. E. G. Padfield gave a scientific paper. Drs. J. F. Hassig, Kansas City, and Alfred O'Donnell, Ellsworth, were among guests present.

MEDICAL SCHOOL NOTES

Dr. O. W. Davdison, '26, has been elected a Fellow of the American College of Surgeons.

The annual Kansas University Medical School banquet was held on October 4 at the President Hotel, with the class of 1914 as honor guests. Attendance was excellent. Dr. C. G. Leitch, secretary-treasurer, states that a suggestion has been received that the annual meeting and banquet be held at the annual session of the Kansas Medical Society next year, and asks that alumni members please notice.

Dr. Mervin J. Rumold, '30, returned September 1 from a three months' European trip and is now the anesthetist at the University of Kansas Hospital.

Dr. Eugene Schwartz, former resident in pediatrics, was operated upon for appendicitis recently at the Children's Memorial Hospital in Boston, where he is serving a residency in pediatrics. Dr. Schwartz plans to return to Kansas City soon.

Dr. and Mrs. Leslie Hays and Dr. and Mrs. Virgil Kennedy visited the hospital October 18, having just returned from a motor trip to Chicago. Dr. Hays, '32, is located in Cedarvale, Kansas, and Dr. Kennedy, '32, is with one of the reconstruction camps in Arkansas.

Dr. and Mrs. F. C. Helwig have just returned from a motor trip east, where Dr. Helwig spent considerable time with Dr. Ewing at the Memorial Hospital in New York City.

Drs. N. F. Ockerblad, O. W. Davidson, Ross Newman, C. K. Smith and R. L. Hoffman attended the meeting of the Southwest Branch of the Urological Association held in St. Louis, Missouri, October 22-24.

Dr. Ralph H. Major and family have returned after a year's trip in Europe. Dr. Major spent most of his time in Germany where his children were in a German school. While abroad he visited the Isle of Cos, the home of Hippocrates.

The following members of the University of Kansas School of Medicine attended the opening of the new research laboratories of the Eli Lilly Company at Indianapolis, Indiana: Drs. Ralph H. Major, Frank C. Neff, Nelse F. Ockerblad, N. P. Sherwood, Cora Downs, Leslie Smith and George V. Herman.

KANSAS MEDICAL AUXILIARY

The Wyandotte County Auxiliary met for its first fall meeting at the home of Mrs. L. D. Mabie on October 11. Tea was served, and Mrs. Clara Aiken Sheer, Kansas City, Missouri, gave a book review.

Hostesses were Mesdames L. D. Mabie, C. M. Brown, J. W. May, Z. Miles Nason, Fred Angle, A. W. Little, A. J. Rettenmaier, C. M. Stemen, T. D. Fitzgerald, J. A. Burger and Miss Anna Richards. Mrs. C. C. Nesselrode was in charge of arrangements, and Mrs. Clay Coburn and Mrs. Charles Stemen poured.

An informal meeting of the Labette County Auxiliary was held at the home of Mrs. R. W. Urie, on September 26, with seven members present. A program for the year to consist of study of legislative problems was outlined and discussed. Mrs. E. C. Duncan, Fredonia, was a guest.

Activities of the Sedgwick County Auxiliary were opened with a tea, on October 15, at the home of Mrs. G. W. Kirby. Previously, Mrs. G. A. Spray, president, entertained members of the executive board with a luncheon at the Innes Tea Room to discuss plans for the coming year.

The Brown County Auxiliary recently held an evening meeting at the home of Mrs. Paul Conrad. Business matters were discussed. Mrs. Gordon Emery, president, gave a report of the National Auxiliary Board meeting, and Mrs. E. J. Leigh read a current magazine article. Members of the Brown County Medical Society, having met at the same time, later joined in a social evening.

EXCHANGES

Mahlon Locke—Foot Twister Extraordinary.—The publicity accorded to Mahlon Locke, Canada's newest contribution to faith healing, has aroused great interest among both the medical profession and the public. The profits to be derived from the sale of shoes to persons suffering with chronic diseases affecting the bones and joints has induced many a department store to add a Locke department to its shoe section. Disciples of the Canadian healer journey about with a motion picture film demonstrating Locke himself in action at the shrine in Ontario. The doctor is shown at work, sitting in a swivel chair while human beings come toward him from eight radiating paths to put their feet trustingly in his lap. Either just before or just after he receives the feet he also receives a dollar bill, which is deposited in his pants pocket. He then bends the foot outward and downward and the patient moves on. Some sort of an associate bends the hands of the patients and there are adjacent quarters in which women assistants wiggle the arms, bend the neck hither and thither and bend the back of the patient over a table. It should be obvious to any one that Dr. Locke's treatment represents psychologic suggestion reenforced by the laying on of hands; perhaps in a few instances the pulling of an adhesion such as any masseur might attempt. The activities of Dr. Locke are a burlesque on the scientific practice of medicine. His promotion is a violation of every traditional, ethical tenet! There are some who say that even psychologic relief for the chronic arthritic patient is worth while, regardless of the means by which it is accomplished. The reaction on the scientific practice of medicine and the chagrin and disappointment of those seriously sick do not permit this lassez faire attitude.

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Alcohol has been used and abused throughout the history of the human race. The problem is no more acute now than it was, but with the widening of the knowledge of human personality and the causes for its abuse, we, the medical profession, can approach this problem from a scientific, rather than an emotional, biased angle.

Many doctors, in their association with the alcholic, view their patient with disgust, intolerance and lack of understanding of the forces which almost compel the abuse of alcohol. They consider him either a degenerate, or insane, and recommend that he be locked up until the habit wears off, or, attempt to preach to him, so that his conscience will prevent his alcoholic excesses.

The alcoholic is always remorseful after his indulgence, therefore cannot be approached through his emotions, his ambitions or his love of family. He is aware of his weakness even more acutely than his doctor. Nor, will locking up the man indefinitely, control the problem because, his anger at those responsible for his incarceration, will well up to the point where he returns to alcohol immediately, through spite, upon his release.

We have taken the attitude that alcoholism is a disease that must be treated. First, the toxemia which results from constantly disturbed metabolism, must be removed. Through normal bodily functions, from one to three months must elapse and, during this period, the patient is nervous, uneasy and, if allowed any freedom, will take alcohol to overcome this feeling, and of course this only prolongs the vicious cycle. By our detoxification method, this period of physical sickness is reduced to about ten days. Following this, physical rehabilitation is pushed and, in about four weeks from time of admission, the patient usually says he feels better than he has in years.

While the physical sickness is being treated, a cause is searched for. This is always found but at times cannot be removed. In this case, we attempt to build up safeguards—both medical and psychic—which will make the abuse of alcohol unnecessary. From four to five weeks under care, is usually sufficient to return the man to the world a better man, capable of resuming his former place. His confidence is restored because, he is allowed some freedom and is not treated as either insane, a criminal or a degenerate; he is prepared to meet his problems sanely, rather than running into an alcoholic coma, for escape and, while he may slip back into his old ways, repeated attacks will cure every patient.

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Moreover, many a person who might be benefited by scientifically applied physical therapy and by competent orthopedic surgery is spending hard-earned money to make the long trek to Williamsburg in search of a pot of gold which those at the end of the rainbow are quite consistently saving for themselves. (Jour. A.M.A.)

STERILIZATION GONE MAD

Medical writers in this country are amazed at the lengths to which sterilization is being carried in Germany. It seems that the authorities are now concentrating on deafness, and all deaf persons have been ordered to report for investigation.

That the hereditary health courts are taking no chances on errors of omission, is evidenced by figures that are now available. In Dusseldorf sterilization has been decided on in 200 out of 240 cases studied, in Hamburg in 761 out of 769. Other cities are proceeding at a like rate.

In the face of such unprecedented happenings, it is not to be wondered at that the medical profession in America is fighting the effort to bring medical practice under political control. How far can any guarantee of professional privacy go under state medicine when records and reports are made the property of a lay bureaucracy?

The argument that such things could not happen in the United States cannot be accepted as final. When compulsory health insurance was introduced in Germany its bitterest opponents did not imagine that it would ever be turned to the purpose it now serves.

The only way to maintain the essential personal relationship between doctor and patient is to retain private practice. The only way to keep politics out of medicine is to keep medicine out of reach of politics. Compulsory health insurance subordinates healing to bureaucracy and places physicians and sick alike at the mercy of politicians. (N. Y. State Jr. of Med.)

The following resolutions were adopted by the American Radium Society and the American College of Radiology at their annual meetings:

RESOLUTION

THE INDISCRIMINQTE USE AND RENTAL OF RADIUM

WHEREAS, It is now recognized that radium has been demonstrated to be of definite value in the treatment of disease, and

WHEREAS, Some states and many communities in the country have little or no radium available, and

WHEREAS, Funds are not always available for the purchase of suitable preparations of radium for use by those physicians who are qualified in radium therapy, and

WHEREAS, We recognize that radium is an agent quite as potent for doing harm as for doing good when used without sufficient skill or training and with the hope of protecting the uninformed public from serious and irreparable injury from improper and insufficient treatment.

BE IT RESOLVED, That we consider it improper, unethical and detrimental to the science of radiology and to the good of suffering humanity for commercial laboratories to attempt to give advice or directions as to the use of radium in the case of a patient whom the person giving that advice has not even had the opportunity to examine. In other words, it is just as difficult to give such advice and directions as it would be for a surgeon to give directions for the use of rented surgical instruments so that an untrained physician might attempt an operation. Various commercial companies advertise both in the journals and through the mails, medical advice for the purpose of making sales or renting radium or radon. This places these corporations in the field of practicing medicine.

BE IT RESOLVED, That the same criticism be applied to institutions which rent or furnish their radium to those members of their staff or outside of the staff who are unskilled in radium application.

RESOLVED, That the same criticism applies to many individual owners of radium.

RESOLVED, That we regard the approval of the National Board of Radiological Examiners as the minimum standard for those assuming the responsibility for using radium. We recommend as wide publicity of this board's existence and approval as is possible to the public, consistent with ethical practices, as the most effective safeguard which can be afforded them.

RESOLVED, That we recommend the refusal of advertising matter in national and state journals when the companies concerned are advertising a medical consulting service or are advertising such service through the mails in connection with their sale or rental of radium.

RESOLVED, That we disapprove of any doctor's acting as a consultant to a commercial company carrying on such a campaign of public or private advertising and that we consider such an association sufficient grounds to warrant disbarment from the approval of the National Board of Radiological Examiners.

RESOLVED, That we recognize the ethical commercial company as a necessity. It is the advertised consulting service that is at fault. It is recognized that such restrictions on the advertising of a medical service will in no way hamper properly qualified radium therapists in obtaining adequate supplies of radium or radon for the purposes in which they are qualified to employ it.

RESOLVED, That we approve an informal medical consultant for the guidance of those commercial companies who refrain from advertising such professional service, either publicly or privately and that in such case their informal consultant be one approved by the National Board of Radiological Examiners.

USE OF *x*-RAYS AND RADIUM IN MALIGNANCY

WHEREAS, It has been proven that radium and *x*-rays, when used properly, and in sufficient quantity, is efficient in the treatment of cancer in certain locations, and

WHEREAS, There is a general fear in the public mind from *x*-ray or radium burns, which because of this fear, prevents competent radiologists from using sufficient radium or *x*-ray to produce the best results.

BE IT RESOLVED, That we as radiologists recognize that in the treatment of malignant disease, it is often necessary to carry the treatment on to the extent of producing a violent reaction in the surrounding tissues, which may cause the skin to peel, and blisters to form, in order to give sufficient treatment to overcome the malignant disease. We believe, therefore, that it is justifiable to produce a second degree radiodermatitis when necessary.

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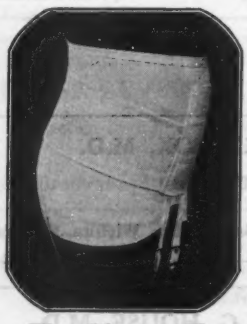

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